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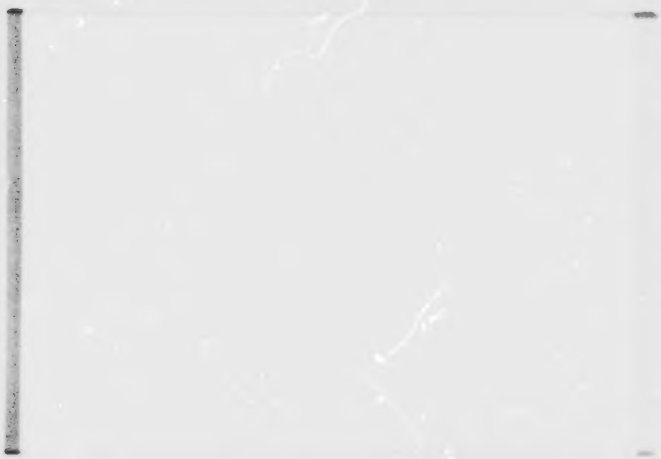

LIGHT WEIGHT STEEL:

APARTMENT INTENSIFICATION STUDY

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Prepared for

Project Implementation Division
Policy Development and Research Sector
Canada Mortgage and Housing Corporation

by

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Toronto, Ontario

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Canada Mortgage and Housing Corporation, the Federal Government's housing agency, is responsible for administering the National Housing Act.

This legislation is designed to aid in the improvement of housing and living conditions in Canada. As a result, the Corporation has interests in all aspects of housing and urban growth and development.

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This publication is one of the many items of information published by CMHC with the assistance of federal funds.

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EXECUTIVE SUMMARY

The intensification of existing low rise apartment buildings on underdeveloped urban sites may provide additional units at lower capital costs, stabilize existing rental properties, and make better use of municipal infrastructure.

Light weight steel construction represents a cost effective method of adding floors to older masonry structures without incurring excessive weight or combustibility problems, and thereby provides an alternative to redevelopment.

This study focussed on the Metropolitan Toronto area, where there are large numbers of low rise masonry apartment buildings, the majority of which were built prior to 1961. A general survey was undertaken to determine criteria for the selection of potential sites. Feasibility criteria included planning restrictions, code conformance, structural capacity, and general need for renovations.

Three buildings were selected for more intensive study, and included a cross section of age, size, location and complexity. Each existing building was analyzed in detail, proposed intensification plans were prepared, and extensive costing was undertaken. A fourth example was also costed for comparative purposes.

In terms of technical feasibility, the study revealed that the physical characteristics of existing buildings pose a lesser challenge than do planning requirements. Although the examples chosen were underbuilt, many variances were still required on such items as site coverage, parking and amenity spaces. Intensification would therefore appear to be better suited to public sector rather than private sector development, due to the time delays expected.

In terms of financial feasibility, the study examined various alternatives based on rental tenure costing. On average, intensification with light weight steel additions would indeed appear to be cost effective, resulting in reductions of 6% in the rent increase arising from a major renovation alone, and of 12% in the rent increase arising from demolition and redevelopment. However, in most cases, this still entailed rent increases of 25-30%, so that the option of "status quo" would remain the most favourable to owners, unless they sought higher income tenants.

One major factor which emerged from the study is that light weight steel intensification has greater benefits for larger projects than for smaller, more complex buildings. Another is that the rehabilitation and intensification of older buildings must be considered on an individual basis due to the number of factors involved.

LOW-RISE APARTMENT BUILDING INTENSIFICATION STUDY

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Part H: Summary of the Study 1

Stage One

Part A: Define thesis

1. Introduction

The subject of this study is the "intensification" of existing low-rise apartment buildings. The proposal for the intensification of low-rise apartment buildings will be through the addition of new units to existing low-rise buildings. Intensification is based on the hypothesis that the buildings are capable of supporting the additional structural loads of multistory additions. This is possible by virtue of these buildings being "over built" and by the proposed use of lightweight building systems for the additions.

The immediate need which this proposal satisfies is the lack of suitable sites in urban areas for the construction of new apartment units. The other aspect identified during this study is that a substantial portion of the existing low-rise apartment building stock require extensive renovations. The majority of the existing stock in the Metro Toronto area was built prior to 1965 and is at an age where expensive repairs are required. The additional units added to these existing buildings provide the opportunity of distributing some of the costs over more units and the opportunity of increasing both the value and the revenue for the property to finance these renovations.

The geographic study area will be Metro Toronto. Even so, every effort will be made to relate our thesis and findings to a Canada wide application. Metro Toronto provides a wide cross section of building configurations and construction methods. Thus, it presents an appropriate selection of Canadian building types. Within this subject area we will provide examples to test our assumptions in regard to technical considerations, code and planning requirements, and to develop costing projections for this method of intensifing the provision of apartment accommodation.

We believe that not only is it technically feasible to increase the number of units within a given structure but also, in many cases, it is socially desirable to do so. By the simple measure of building density, many of these older buildings are well below the density that is permitted today. In the past, such buildings were often bought and demolished. Through the use of additions to the existing buildings, the new units are integrated into the existing urban and social fabric of the community, rather than requiring new lands to be developed.

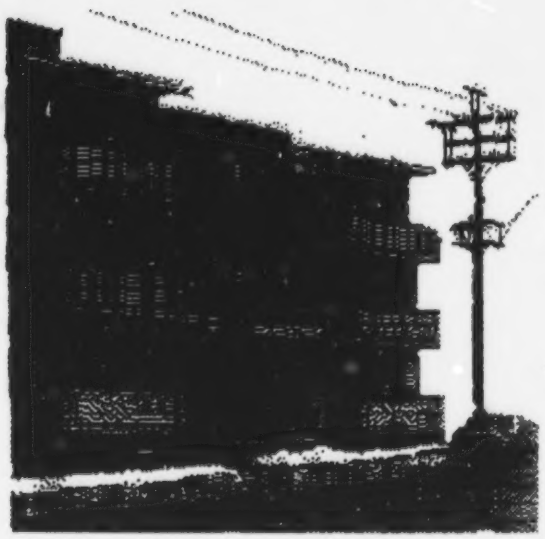


Illustration [i.] A three story lowrise apartment building

In summary the various aspects of the study may be outlined as follows: the need exists for "intensification" due to the low vacancy rates of apartment rental stock in many areas of Canada. The need to rejuvenate existing buildings is the result of the age and standards used to construct many of these buildings. The benefits to the "intensification" of these buildings is that it is a cost effective means of upgrading the existing housing stock and providing additional units. The study is proposed to be used as an information base. The "cost effective " claims of this study are dependent on the method of financing the projects and the means of tenure associated with the buildings. These aspects of the "intensification" will be examined in detail but the use of this study will be on an individual project bases. This study will examine a range of possible projects with conservative financial modeling.

II. Define Study

It is proposed that this study will examine and document "intensification" proposals for three sites in the Metropolitan Toronto Area. The study will begin by examining a representative sample of the general low-rise housing stock in Metro Toronto and will determine the size, variations, condition, number, distribution, etc, of these low-rise buildings. From this examination of the general condition, generic classifications will be given to these properties and general categories established so that the detailed examination of three proposals will reflect the general condition. The criteria for the conversion or intensification of

these properties will also be established during the first stage of this study to aid in the selection of typical examples.

Three sites will then be selected for the second phase of the study and will be examined in detail as to the technical requirements, building system and rehabilitation alternatives, code conformance, design, and costing of the various proposals for "intensifing " these properties. Upon completion of the costing, the third phase of the study will examine the financing, development costs, mode of tenure and projected rent schedules or sale values in order that a complete development forecast may be presented.

The object of the study is to provide an information base for use by other people for the purposes of providing new additions to existing buildings. As with other studies of building problems, it is difficult to separate the technical constraints from the other landuse, design, financial, and tenure influences on the technical solutions. These other aspects determine how the technical choices are made. Therefore in order to propose realistic solutions and to document the costs, impact and practicality of the proposed solutions, it will be necessary to examine and document the other constraints to the technical solutions.

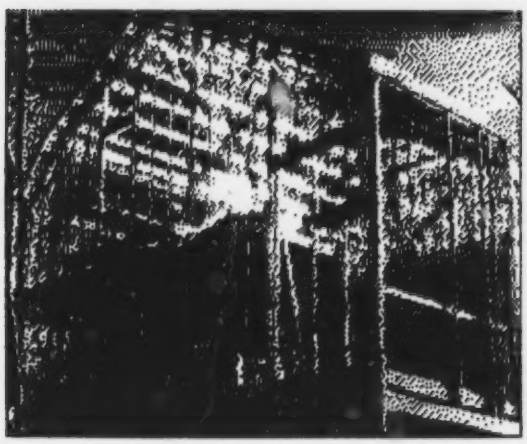


Illustration [ii.] Light Weight Steel Framing of a three story building at the Rocky Crest Resort. CBA Architects, 1984

III. Define Intensification.

The purpose of this study is to investigate existing three to five storey apartment buildings with the objective of adding one, two or three storey additions to these structures. The buildings and their additions will be examined in terms of the structural, mechanical, electrical and

architectural requirements. Cost estimates from this work will then be combined with purchase costs, development costs, finance costs, etc. in order to scrutinize the viability of such a project.

The general category of properties to be included in this study may be described as low rise masonry apartment buildings built in this century. These buildings are from two to five stories in height and contain nine or more units. The majority of the buildings have been built in the 1950's and 60's in urban locations. For the convenience of the authors, all examples will be chosen from the Metro Toronto area.

The proponents believe that one and two, or three storey additions are made possible with the use of lightweight building systems utilizing such technologies as lightweight metal framing, ceramic face brick and insulation systems, sheet metal roof systems, and compatible systems which are approximately 30% of the dead weight of conventional systems. The existing buildings lend themselves to these additions by virtue of their age. At the time that many of these buildings were constructed the codes calculated live loads at 50 lb. per sq. ft., structural strengths for masonry and concrete at an additional 10% of today's standards, and in many cases soil conditions for foundation load bearing capacity was assumed to be 2.0 kips when tested conditions have shown a 3-4 kips capacity. We believe from preliminary examination that one and two storey additions are technically possible subject to the detail examination of these properties.

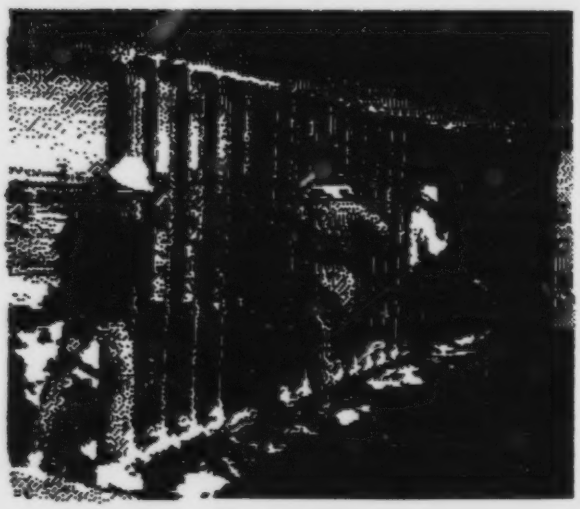


Illustration -- of the prefabricated LMF panels for the Third Floor Additions to the Nottawasaga Inn. CBA Architects, 1982.

The study will examine the alternative methods of construction comparing lightweight construction systems with other traditional methods of construction. Areas for examination will be to expand the consideration of the primary structural system of lightweight steel framing to include other compatible building materials and building systems for such elements as roofs, walls, mechanical systems, and interior finishes. These alternatives will be investigated, documented, and relevant technical information is provided.

In the examination of the additions to these buildings, some of the building systems, such as lightweight steel framing may not be a part of the traditional construction market. In view of this condition the proposed methods and building systems examined in the study will be documented as to their compliments with codes and standards, specifications, and any other implications on the construction process. Suppliers, fabricators, and installers of these systems or materials will also be documented and listed where possible.

The other portion of this study is the 'rehabilitation' of the existing units and their support systems. As the study will address the renovation of these buildings with a view to both the financing by private means and through C.M.H.C. programs, the difference in this criteria will require the study to list and to provide costing for alternative provisions in the anticipated scope of work for each building. The requirements and standards vary according to the governing Codes and funding conditions applied by various Institutions. The most striking differences are the requirements contained in the National Building Code under the social housing programs compared to the requirements of the Ontario Building Code which would be used in a private rehabilitation project.

IV. Study Subject Area

Establishing the subject area for consideration or the "typical building" to be used in this study is a difficult task since the statistical information base on "low rise apartment buildings" in Ontario does not contain sufficient information as to the building type or configuration. The Following sources have been used for the study and have been found to contain the most complete information on this sector of the housing industry. The first study titled "Under Pressure: Prospects for Ontario's Low-rise Rental Stock",[1], a report prepared for the Ministry of Municipal Affairs and Housing by Peter Barnard and Associates, June 1985. In addition a report for the Housing Renovation and Energy Conservation Unit , Ministry of Municipal Affairs and Housing,[2], by Clayton Research Associates Limited, July 1984 has also been used in preparing this study. Some qualifications should be made on the use of this data. As the reports are of the conditions in all of Ontario, where possible the information used

will be for Metro Toronto and identified as such. There are differences in the statistics between the Metro area and other areas of Ontario, therefore care must be taken in any extrapolation of this information to Ontario or other parts of Canada.

As a third measure of low-rise apartment stock, statistics will be presented from the City of Toronto's, Planning and Development Department, Research and Information Department, [3], on the stock of lowrise building in the City. Again some caution should be used in the extrapolation of this information as the City may not mirror the Metro area, Ontario, or the Country. This addition source has been included as it is the only source found which can isolate some specific characteristics.

The first stage of this study is to establish the general categories of low-rise buildings for consideration in the later stages of the prototypical designs. In the simple definition of the type of building to be considered for this study, it was described as a building containing nine or more units in three to five story configurations. As the majority of the information readily available is related to the Ontario sample, the first area for consideration is to establish the relationship between the Ontario and Metro Toronto sample.

In the Toronto C.M.A. (Census Metropolitan Area), the distribution of housing stock according to the 1981 Census of Canada was is as follows;

Table [1.]
Toronto CMA

-Lowrise structures-	Rental units-	96,520
-Percentage of the distribution of this type of rental stock in Ontario		33.0%
-Lowrise as a percentage of the total rental stock in the Toronto CMA		21.3%

Source: 1981 Census of Canada (2)

The assumption made is that the Metro Toronto sample should represent a typical cross section due to its one third contribution to the total stock, even though it may represent a lower average contribution to the total rental stock in Toronto than its contribution in other areas of Ontario.

The age of the typical building should be examined since this will

bear on the anticipated physical condition and on other assumptions such as mechanical systems, construction method, and the area of an existing community where it was built.

Table [ii.]
Occupied Low-rise Rental Stock by the Period of Construction
Table [ii.]

	Toronto CMA	Ontario
-1945 and earlier-	31.1%	31.1%
-1946-1960-	40.7	26.5
-1961-1975-	22.7	32.8
-1976 and later-	5.5	9.6

Source: 1981 Census of Canada (2)

Occupied Low-rise Rental Stock by the Period of Construction
Table [ii.]

	City of Toronto
-1945 and earlier-	49.7%
-1946-1960-	32.9
-1961-1975-	2.9
-1976 and later-	12.5
- unknown-	2.0

Source; City of Toronto [3]

The variance between Toronto CMA and Ontario statistics is that a higher percentage of units were constructed prior to 1960. In the City of Toronto, approximately one half of the buildings were constructed prior to 1945. These variences should not distort the examination of low-rise buildings in Toronto area.

In this tabulation approximately 70% of the low-rise buildings were constructed prior to 1961 in the Toronto CMA and in the City. The inference from this statistic is that the original mechanical systems have been replaced or are probably in need of extensive repairs in this age of building. The Fire Safety measures in these buildings would not be equal to current standards. The energy efficiency and comfort levels would be questionable due to single glazing for the windows. the interior finishes and features would require refurbishing.

The observation of age and its impact on the condition of the building from the raw statistics is difficult to substantiate. The only statistical information available to confirm this assumption was contained in the Clayton Report (2). This information collected in response to census questions, had the following caution in the report, "..the Census is not considered to be a very reliable source of data on dwelling condition.

Respondents are generally not sufficiently familiar with the building maintenance and conservation procedures to provide reliable information in this regard."

Occupied Rental Stock by Dwelling Type and Condition-Ontario
Table [iv.]

-In Need of Maintenance Only-	72.7%
-In Need of Minor Repairs Only-	18.8%
-In Need of Major Repairs Only-	8.5%

Source: 1981 Census of Canada (2)

Occupied Rental Stock by Condition and Period of Construction- Ontario
Table [v.]

	1945 or earlier	1946-60	1961-75	1976 or later	Total later
-In Need of Maintenance Only-	62.6	68.5	80.3	91.5	72.7
-In Need of Minor Repairs Only-	24.3	22.2	14.5	6.3	18.8
-In Need of Major Repairs Only-	13.1	9.3	5.2	2.2	8.5

Source: 1981 Census of Canada (2)

For the Toronto area the observations from the age of the building would indicate that the percentages of buildings in need of minor or major repairs would be higher as the percentage of buildings constructed during the period from 1946 to 1960 is higher than the Ontario averages. Thus, it may be assumed that this would indicate a lower average quality of low-rise accommodation in the Toronto area. The statistical information comparing the Toronto and Ontario averages do not substantiate these observations, but due to the inconsistencies of the source and methods of obtaining the information, the true situation may be underestimated.

Occupied Low-rise Rental Stock by Condition and Location
Table [vi.]

	Toronto CMA	Ontario
-In Need of Maintenance Only-	69.0	72.8
-In Need of Minor Repairs Only-	20.6	18.8
-In Need of Major Repairs Only-	10.4	8.5

Source: 1981 Census of Canada (2)

In conclusion it appears that for the purposes of this report, sufficient correlation exists between the Toronto and Ontario Statistics for the Metro Toronto sample to reflect the Ontario condition. The Sample selection for the

first stage of examination should also reflect an adjusted average between the Metro area and Ontario. The cross section adjusted is displayed in table [vii.]

Selection of Low-rise buildings by age in the Toronto area
Table [vii.]

1945 and earlier	33%
1946-1960	37%
1961-1975	29%

The study also proposes to cap the age of buildings at 1975 for the purpose of the study. Buildings after this date will not reflect as great a need or benefit from the "intensification" proposals. They will not provide the same degree of opportunity, in that they should not reflect the depressed property values that older properties would have. In addition buildings dated after 1975 may not contain the same "overbuilt" qualities as the Codes and building methods would have change after this date.

The source of information as to the distribution of buildings by height is only availabe from the City of Toronto. In tables [viii.] and [ix.] the distribution of buildings and units by the characteristics of the building height are presented. Caution should be used in the extrapolation of this selection to the general condition.

City of Toronto, Number of Buildings By Height
Table [viii.]

Three Stories	60.3%
Four Stories	30.5
Five Stories	9.2

Source; City of Toronto [3]

Distribution of Buildings By Unit Class, City of Toronto
Table [iv.]
Frequency
Percent

	9-20 units	21-40 units	41-80units	80+units
Three Story	203 26%	159 21%	84 11%	12 1.5%
Four Story	30 4%	53 7%	44 6%	105 14%
Five Story	1 .13%	25 2.5%	19 3%	25 3%

Source; City of Toronto [3]

These Tables describe the dominant condition as a three story building with nine to forty units for the City of Toronto. The secondary condition would be a four story building with more than twenty one units. Again some caution may be required in the literal interpretation of this information as some buildings, such as the Walmer Road examples, [referred to in later sections of the study], constructed with a partial floor below grade may be classified by the Planning Department as a three story structure, when they are in fact a four story building. With this consideration in mind, the dominant low-rise in the City may be a three or three and one half story building of twenty one to forty units.

V. Conclusions

Some qualifications should be made on the use of the statistical data in determining average conditions. There are differences in the statistics between the City of Toronto, Metro Area, and of Ontario, therefore care must be taken in any extrapolation of this information to Ontario or other parts of Canada.

The assumption made is that the Metro Toronto sample should represent a typical cross section due to its one third contribution to the total stock of Ontario, even though it may represent a lower average contribution to the total rental stock, [low-rise and high-rise], in Toronto than its contribution in other areas of Ontario.

In this tabulation approximately 70% of the low-rise buildings were constructed prior to 1961 in the Toronto C.M.A. and in the City. The inference from this statistic is that the original mechanical systems have been replaced or are probably in need of extensive repairs in this age of building. The Fire Safety measures in these buildings would not be equal to current standards. The energy efficiency and comfort levels would be questionable due to single glazing for the windows. The interior finishes and features would require refurbishing. The habitable condition of these buildings is at a critical point where extensive re-conditioning may be required.

The dominant condition of low rise apartment stock is a three story building with nine to forty units, [City of Toronto]. The secondary condition would be a four story building with more than twenty one units.

Stage I

Part B: General Criteria for "Intensification" of Potential Subjects

1. Demand & Opportunity

The demand for accommodation in the Toronto area can be measured by a variety of indicators. These include, the availability of rental accommodation through the vacancy rate, fluctuations in the building rate for other types of apartment accommodation such as condominiums, and the projections of future needs through the projections of the disappearance of low-rise apartment units from the market. The task of this section is to give some indication of the demand or need for low-rise apartment accommodation. As it is not the mandate of this study to establish the "market" for this type of unit, the subject will be examined in broad and general terms.

According to figures provided by the regional offices of C.M.H.C., the apartment vacancy rate for retail accommodation in the CMA toronto area is 0.04% as of March, 1986. For the Metro Toronto area the figure is 0.02% as of the same date. In the jargon of the media, any figure below 2% is considered as a housing crisis in the Toronto Market. These figures are for the general market demand are not broken down by either population segments.

The demand for assisted housing in the City of Toronto may be measured by the waiting list for City Home, as of mid 85 was for 6411 units and for Metro Housing Authority was for 4000 units in the City of Toronto.

The present accommodation provided by low-rise rental buildings may affect the future general demand for accommodation as is indicated in the report by Peter Barnard Associates[1]: in the next ten years the metropolitan areas of Toronto, Ottawa, and Hamilton will lose approximately 16% of the existing low-rise stock due to physical deterioration. Over the next 20 years the figure may be as high as 46%. The other factor that is likely to further increase the medium and long term losses of low-rise accommodation is the redevelopment or conversion of of these buildings. The conclusions based on case studies and various extrapolations is that a further 14 % of this stock may be lost in the next 10 years. The conclusions from the examination of the various factors is that up to 30% of the total stock "could be affected by some form of significant change over the next ten years." If these are true indications, the existing housing shortages will be subject to further pressures.

Taking this loss or "significant change" as a percentage of the total housing in the Toronto CMA, it would result in the need to replace approximately 30,000 housing units in the next ten years. The figure through the use of the population segments housed in this sector of the market would indicate that approximately 41% (2) of the displaced households would be below the poverty line. This would indicate the need for approximately 12,000 additional assisted housing units. The population segments would, by the profiles given in the Barnard Report, be comprised of the young and the old. Their figures indicate that, "52% of the household heads in the low-rise stock are headed by someone under the age of 35." The figure for those over 64 years of age is 17.9% (2). Thus it may be assumed that based on these "need" indicators, means should be found by society to conserve this housing stock. The people displaced from this form of accommodation will comprise a segment in need of assisted housing and in need of the specialized housing for both the young and the aging.

Another factor which indicates the demand for housing in this sector are the relative average values of the units in low-rise buildings. This indication was developed in the random selection of buildings listed in the multiple listings of the Toronto Real Estate Board. Being a random selection from only one source, it does not pretend to be a statistically accurate measurement of the true average value of low-rise units traded in the Toronto area in the last year. The average asking price from the sample of 37 buildings is $31,000.00.

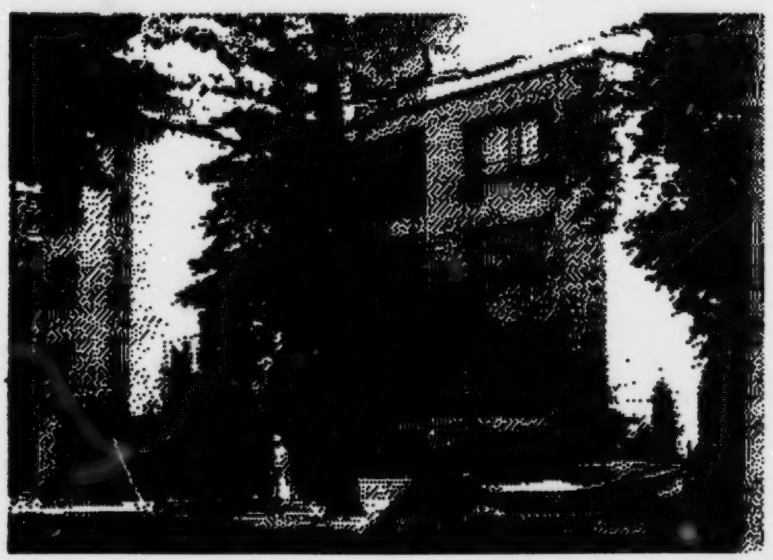


Illustration [iii.] 27 Walmer Road

II. Code Requirements

The two codes of one is concerned with in the "intensification" of existing buildings are the Ontario Building Code - Ontario Regulation 549/84, the National Building Code of Canada - 1985, the Supplement to the National Building Code - 1985, and the Canadian Code for Residential Construction Residential Standards 1980.

In respect to the Ontario Building Code all existing residential buildings may be considered under the new Part 11- Residential Renovation, in which a more lenient consideration is given to some of the requirements of Part 3. In instances where compliance with the requirement is impractical because:

In extending portions of existing buildings should the increase in occupant load be greater than 15% and more than 16 people the following compensations are required:

(a) *access to exit* widths based on *occupant load* must comply with code requirements
(b) *exit* widths must comply with code requirements
(c) *exit* signs are required
(d) lighting of *exits* and *access to exits* and all emergency lighting must be brought up to the new code standards
(e) fire alarm and detection systems must be upgraded

Where the National Building Code is enforced in respect to all items structures will generally fall into two classifications.

(1) buildings up to 18 metres in height
(2) "Additional Requirements for High Buildings"

The latter (2) applies to structures in which the uppermost floor is over 18 metres in height and may not be a consideration in low-rise intensification projects. These measures are elaborated by "The Supplement to the National Building Code" and are generally in conformance with the O.B.C. requirements of Subsection 3.2.6.

Requirements for High Buildings.
General: For Fire and Life Safety special measures for smoke control are required in buildings of Group C major occupancy whose top floor levels are more than 18 metres above grade. The N.B.C. refers to the *Supplement to the National Building Code, 1980* which classifies buildings into 14 measures from A to N depending on floor layout, elevator location, and

stair position. Further elaboration is given for each measure regarding mechanical ducting, pressurization, closures, dampers, service spaces, and other types of smoke restriction between floors such as balconies as areas of refuge(smoke free areas), and vestibules on each floor.

The O.B.C.'s Additional Requirements for High Buildings

Generally residential buildings under 36 metres in height can have balconies with a minimum 1.5 metre depth from the outside face of the exterior wall to inside edge of the balcony with at least .5 metres of balcony per occupant in lieu of many of the other smoke requirements. Each stairway must also be vented to the outdoors and special requirements may also be required to control exhaust fans spreading smoke throughout the building. For other measures and requirements the O.B.C. makes reference to the *Supplement to the National Building Code, 1980*

It can be appreciated that each individual building is unique in how it is interpreted in respect to the appropriate Codes. However, as noted in the following chart there are certain requirements which will remain consistent for all buildings in the study group of which we are concerned.

Group C up to 3 Stories - combustible or noncombustible with floor area limits requirements for sprinklered and unsprinklered buildings. Basements to be subdivided into 3/4 hour fire separations not exceeding 500 sq. m or to be sprinklered.

Fire Separations:	1st & basement
mezzanines	other floors
	3/4 hour
3/4 hour	3/4 hour
if combustible	

Group C up to 6 Stories - non combustible with floor area limit requirements for sprinklered and unsprinklered buildings. Basements to be subdivided into 2hour fire separations not exceeding 500 sq. m or to be sprinklered.

Fire Separations:	1st & basement
1st with crawl space	
2 hours	1 hr or subdivided into
500sq. m or spr.	
other floors	roof
	1 hour
1 hour or sprinklered	

Note: if basements are completely enclosed as part of the unit only a 1 hour

fire rating is required and no fire separation.

Group C any height - Noncombustible with no limits for floor area.

Fire Separations:	1st & basement
1st with crawl space	
2 hours	1 hr or subdivided into
500sq. m or spr.	
other floors	mezzanines
	2 hours
1 hour	
	other floors
roof	
	2 hours
1 hour or spr	

III. Land use, Planning, Municipal Requirements

The lot size and present density of the properties vary in the samples collected for this study. The random selection of the samples display densities from 37 units per acre to 226 units per acre [Table x.]. The average in this sample was approximately 90 units per acre. The other trend identified in this examination is that the buildings in the older sections of the Metro Toronto area, the City of Toronto, tend to be at the higher end of the density scale; that is an average density of 119 units per acre. Again, an observation that may account for this higher density, born out by subjective observations and the random sample is that the sites in the older areas of the City were developed before the post war zoning standards were in place. Lot size and the density have a tenuous relationship to the the age of the building. The other observation based on the sample is that the higher density building based on the units per acre measurement may not in fact have a higher gross floor area density in that these buildings tend to also have a higher proportion of bachelor or one bedroom units than the low unit per acre examples.

The conclusions based on the examinations of the unit per acre density are that the selection of typical buildings for the second part of the study should contain examples at both end of the spectrum as displayed by the random sample. An example should be examined that displays a high unit per acre density in order that ancillary planning criteria such as the provision of parking may be examined. Conversely an example at the lower density, perhaps in a suburban site, would also demonstrate the another category of typical building, for example coverages and the other extreme of the problem.

The sample and the analysis of the information confirmed another observation regarding the density variations of the low rise apartment

buildings. In the sample a lot area was given in the real estate listing. Assuming unit sizes, typical floor unit mixes, and common area percentages, a typical floor area or building area was extrapolated from the information available. Again the information for each building may not be factual. However, it does serve to display another set of variations in the search for typical categories of buildings, such as the comparison between the lot area and the building area. A number of buildings occur at the low end of the scale and a casual correlation exists between the unit mix, age, location and the building coverage. A typical generic category for the selection of a building for further study is a site which has a high building coverage ratio. This affects the size of the amenity area and the number of parking spaces provided on the site. .

In reviewing the building density categories, a range of typical physical conditions are apparent. The relationship to the planning, zoning, and building standards vary with their location in the various municipal jurisdictions. An examination of the samples reveals both conformance to present municipal zoning standards, and buildings substantially in non-conformance to current standards at their present intensity of use. The other factor revealed in the examination is that the Municipal standards also vary. In some municipalities, such as the City of Toronto, zoning "bonuses" are available for buildings containing such categories of use as "assisted housing". In general the municipalities in the Metro area have provision in their Official Plans and zoning designations for use to accommodate the aging or handicapped in reference to such planning criteria as parking standards and densities.

The general statement made in the introduction of the study, "Many of these [low-rise buildings] are below the density permitted today." should receive a note of caution. The density calculation may be one measure of the permitted use and not describe the whole condition of the zoning of the property. As these buildings are existing structures and may have been built under obsolete zoning designations, the buildings may not conform to other standards of land use such as setbacks, unit per acre calculations or parking standards. Although the "density" may be under the maximum permitted, other measurements may restrict the "intensification" of the property. In the examples examined for this study, the primary consideration used by municipal planning authorities was the "density" measurement, however in every case, variances to the present zoning bylaws would be required.

The parking standard in the City of Toronto for most areas would be to the following schedule;

Bachelor unit	0.3 spaces per unit
One bedroom	0.5
Two bedroom	0.75

Three bedroom	1.2

The standard for assisted housing would be;

Bachelor unit	0.3 spaces per unit
One bedroom	0.5
Two bedroom	0.5
Three bedroom	0.5
Visitor	0.06

In North York the standard would be;

Bachelor unit	1.0
One bedroom	1.0
Two bedroom	1.0
Three bedroom	1.0
Visitor	0.25
Service vehicals	0.25

Another condition of existing apartment buildings which were built in the 1950's and 1960's is that the municipal standards of one or more parking spaces per unit may now exceed the present demand due to the changes in life style and availability of public transportation. In each example studied of buildings containing the high parking per unit allocations, both in the City and in the suburban municipalities, the availability of parking substantially exceeded the demand. In general the provision of parking at an average of .75 [or less] spaces per unit can be substantial for units targeted at lower income tenants.

General community services such as transportation, schools, social services, etc. should not be a criterion in the selection of typical sites or an impediment to the implementation of intensification schemes. The assumptions are that developed areas of some age are experiencing a population decrease through the aging of their populations.

From the examples examined in Metro Toronto other planning criteria affect each project. These are such regulations as building set backs from property lines and streets, angular plane set backs in relationship to building height and landscaped open space, access to the buildings, building height restrictions, etc. These standards may have changed and rendered the existing buildings into a non conforming status in regard to various municipal standards. These standards are so diverse and are dependent on the municipality that the only general conclusion to be reached is it is probable that each building will either require variances to the set standards due to existing conditions or as a result of the intensification of the building.

As these variances to the existing standards affect the development of these properties, the assumption made in this study is that an application for relief from these standards will be required for the majority of candidate buildings. In Ontario, this relief may be sought either through the application for minor variances from these zoning standards or through a process of rezoning the subject properties. Although, rezoning process is more time consuming than a Committee of Adjustment Hearing for minor variances, it may be required by the Municipality. In this regard, each site must be examined as to its present and future conformance with zoning standards, and the Municipality's acceptance of minor variances. The general statement may also be made that buildings on large sites, built to low densities, will tend to conform to zoning bylaws, in their present configuration and with additions.

IV. Conclusions

The conclusions from the examination of the various factors is that up to 30% of the total [low-rise] stock "could be affected by some form of significant change over the next ten years."[1] If these are true indications, the existing housing shortages in rental housing will be subject to further pressures.

The lot size and present density of the properties vary in the samples collected for this study. The random selection of the samples display densities from 37 units per acre to 226 units per acre [Table x.]. The average in this sample was approximately 90 units per acre. Low-rise buildings do not display an average catagories as to "density" measurements.

The general statement made in the introduction of the study, "Many of these [low-rise buildings] are below the density permitted today." should recieve a note of caution. The density calculation may on be one measure of the premitted use and not describe the whole condition of the zoning of the properity. Although the "density" may be under the maximum permitted, other measurements may restrict the "intensification" of the properity requiring variences to the present zoning bylaws would be required.

TABLE X

	1	2	3	4	5	6	7	8	9	10	11	12	15	16	18
1		Adress	City	Zoning	Lot Area	Height	Units	unit	Type	Park'g	age	Value	Uls/lot	Uls/acre	$/unit
2															
3	1	24 Second st	Etob		11,400	3.5	23	1	B		55	575,000	496	88	25,000
4								14	1						
5								8	2						
6															
7	2	2647 Keele	NY	comm	24,867	3	33	9	1	40			754	58	0
8								24	2						
9															
10	3	115-19 Euclid	To		8,710	4	16	16	2	10	20	699,900	544	80	43,743.75
11															
12	4	5 Fernwood Grd	Ey	Res	4,475	3	12	1	B		60	345,000	373	117	28,750
13								11	1						
14															
15	5	6 Fernwoodo	Ey	Res	6,960	3	12	1	B		60	350,000	580	75	29,166.67
16								11	1						
17															
18	6	818 Broadview	To		8,480	3.5	28				60	750,000	303	144	26,785.71
19															
20	7	200 Cosburn	Ey		16,785	6	43	42	1	39	65	1,290,000	390	112	30,000
21								1	2						
22															
23	8	109 Pembrook	To		8,280	2.5	21	14	B	12	20	750,000	394	110	35,714.29
24								7	1						
25															
26	9	96 Isabella	To		6,000	4	28	8	B		30	845,000	214	203	30,178.57
27								19	1						
28								1	2						
29	**	368 George St.	To		6,800	3.5	16	1	B	11	30	849,000	425	102	53,062.5
30								15-1	1						
31															
32	**	45 Pembrook	To		7,265	2.5	12	12-1	1	12	30		605	72	0
33															
34	**	6 Saranac Blvd	NY		33,450	3.5	52	8-8	B		60	1,250,000	643	68	24,038.46
35								32-1	1						
36								12-2	2						
37															

Low Rise Apt. Building Survey

	1	2	3	4	5	6	7	8	9	10	11	12	15	16	18
38	**	4 Humewood	Y		8,183	3.5	10	1	1		30	475,000	818	53	47,500
39								9	2						
40															
41	**	2 & 4 Cannaught	Y		5,500	3	15	9	1	8	60	475,000	367	119	31,666.67
42								6	2						
43															
44	**	2 Humewood	Y		8,902	3.5	9				30	489,000	989	44	54,333.33
45															
46															
47	**	318 Clinton	To		10,530	3	10				30	559,000	1,053	41	55,900
48															
49	**	1463 King W.	To		8,280	3.5	16	2-B			30	630,000	518	84	39,375
50								1-1							
51								13-3							
52															
53	**	118 Roncesvalles	To		8,525	2.5	20	12-B			30	1,050,000	426	102	52,500
54								9-1							
55								9-2							
56															
57	**	1317 King W	To		15,000	2.5	24	-2			20	1,080,000	625	70	45,000
58								-3							
59															
60	**	1 Triller	To		6,500	3	27	25-1		27	60	575,000	241	181	21,296.3
61								1-2							
62								1-3							
63															
64	**	12 Landsdowne	To		6,750	3.5	35	19-B			30	599,000	193	226	17,114.29
65								16-1							
66															
67	**	1161 O'Connor	EY	Comm.	6,688	2.5	11	6-1			60	265,000	608	72	24,090.91
68								5-2							
69															
70	**	688 Sheppard East	NY		41,100	3.5	35				60	1,550,000	1,174	37	44,285.71
71								13-1							
72								21-2							
73								1-3							
74															

	1	2	3	4	5	6	7	8	9	10	11	12	15	16	18
75	**	3207 Kingston	Scarb		55,132	4.5	49	1-B			60	1,700,000	1,125	39	34,693.88
76								12-1							
77								31-2							
78								5-3							
79															
80	**	1191 Ellsmere	Scarb		26,609	4.5	24				60	750,000	1,109	39	31,250
81															
82		1040 Castlefield	Y		25,197	3.5	44	21-1			60	949,000	573	76	21,568.18
83								23-2							
84															
85	**	2 Ridelle	NY		16,456	5	44	27-1			60	1,225,000	374	116	27,840.91
86								12-2							
87								4-B							
88								1-P							
89															
90	**	477 Wilson	NY		*******	4	40	1	B	23	60	940,000	459	95	23,500
91								30	1						
92								9	2						
93															
94	**	2647 Keele St.	NY		*******	2.5	33				60	898,000	754	58	27,212.12
95															
96	**	1848 Jane St.	Y		11,872	3.5	20	7	1		60	620,000	594	73	31,000
97								13	2						
98															
99	**	2740 Jane St.	NY		51,660	5	49	22	1		70	1,800,000	1,054	41	36,734.69
100								27	2						
101															
102	**	27 Walmer Rd.	To		*******	3.5	32				54		502	87	0
103															
104															
105						tot	843								
106						ave/bdl	27.2						Ave./u/e	90	31,040.69
107															
108															
109															
110															
111															

Stage I

Part C: Physical Criteria for Intensification

I. Physical Condition

The previous sections of the report have dealt with the qualities of the "typical building" in order to determine candidates for use in this study. As shown in the random sample of buildings obtained through the Real Estate Listings, the physical conditions vary with the construction systems used in the original buildings. The physical condition also varies with the age of the building, since a direct relationship exists between the construction systems used in the original buildings and the period in which the building was constructed. For example the older buildings, constructed before 1945 are predominantly of masonry and wood construction. The average building of this era also contains a hot water heating system, minimum electrical distribution, primitive fire detection and alarm systems, and other antiquated mechanical equipment and systems. Buildings constructed between 1945 and 1960 will have been constructed with a variety of structural and mechanical systems. Towards the end of this era in the Toronto area, the dominant structural system was a load bearing masonry and steel joist construction. Mechanical systems are more comprehensive and may be more sophisticated using central fire alarm systems, fire fighting systems, the building may also contain elevators, corridor pressurization systems, central garbage disposal systems, and communication systems.

The diagram of a building section shown as illustration [v.] is typical of many low-rise buildings in Toronto. Built in 1957, this building is constructed with the load bearing masonry walls and steel joist floor system. In this example a complete set of drawings are available, which is unusual for buildings of this era. It is the client's desire to add three additional floors to this building. Preliminary analysis indicates that the additional three floors will result in a number of problems.

The masonry bearing walls when subject to axial stress calculations would exceed the 85lbs. per square inch limit allowed by the imperial calculations for the hollow masonry units. In order to procede, a process has to be used which is allowed for engineereal masonry. Since the test results and inspection reports are not available from the time of construction a reverse procedure must be used. Subject to agreement with

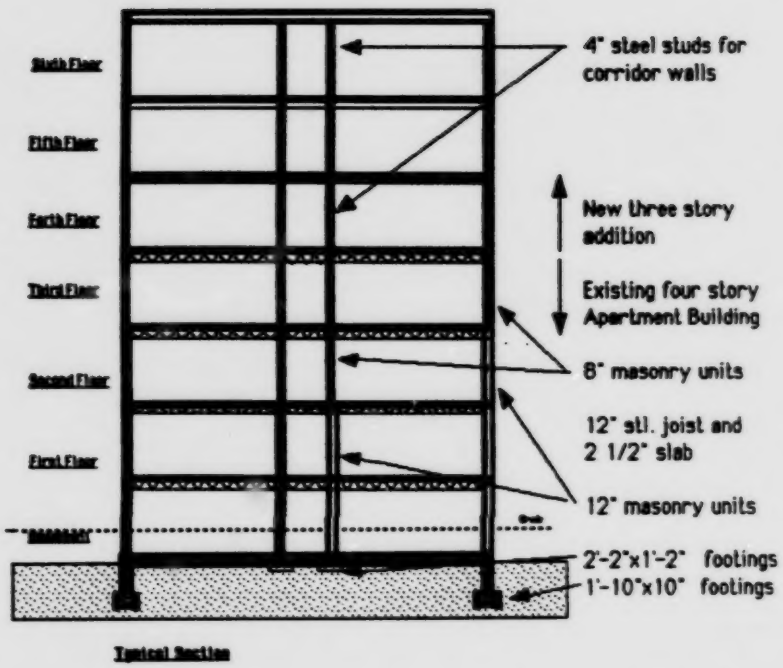


Illustration [v.] of a typical 50's three story apartment building in Toronto with a three story addition

the governing authorities, sections of the masonry must be removed and stress tested to establish its stress limits. The range allowed for engineereal masonry is up to 200 lbs. per square inch which will more than accommodate the additional floor.

Other considerations in this example are the openings in the exterior walls at the basement level configured for garages. Examination of the lintles and columns will be required to assure their bearing capacity.

The foundations as shown on the original drawings will also be overstressed in the corridor area of the basement by approximately 25% with a three storey addition. This will probably require that the footings under the corridor be underpinned for the three story addition. In this example based on preliminary examination it is felt that the additional soil testing will not accomplish this goal because of the design configuration of the strip footing.

Therefore the conclusion based on these observations is that the selection of a typical building or the determination of the generic categories is related to the age of the building and the structural systems used in the

construction of these buildings. For the purpose of this study, a selection of buildings displaying a variety of conditions will test the premises of the intensification proposal. As the buildings vary and must be examined on an individual basis, the determination of "typical" categories may not be appropiate for this study.

In the selection of a typical building the primary determining factor for additions to the existing building is the structural capacity of the structure to receive the addition. Therefore a should examine a variety of structural systems which will determine the physical condition of the building.

From recent experience and in the examination of a number of buildings a check list of the physical qualities was compiled for thei selection of a building for detail study. The following is a list of Construction Type as related to building code classifications.

II. Physical Criteria of Building for Intensification

[i] Construction System and Classification

Examination of the physical condition should start with the assessment of the structural system used for the building. The structural system may be combinations of some of the following methods of constructing, the primary structure, foundations, floors, walls, roofs, etc.

Primary structure	-Wood heavy timber column and beam -Wood frame -Steel column and beam -Concrete flat slab and column -Concrete shear wall and slab -Masonry load bearing walls
Foundations	-Masonry units on concrete strip footings -concrete footings and walls
Floors	-wood joists, wood flooring, plaster finishes. -steel joists, wood flooring, plaster finishes. -steel joists, concrete flooring, plaster finishes and gypsum board finishes. -concrete slab floors, with plaster and wood finishes. -precast concrete panels, with plaster and wood finishes.
Walls exterior	-wood frame with a variety of finishes -Masonry, solid, veneer, and cavity wall, load bearing and non-load bearing

-precast concrete
-Rain screen wall construction with a variety of finishes including metal panels, glass, brick, etc,

Roof construction -Wood frame with a variety of finishes (asphalt shingles, tar and felt, metal panels, etc.)
-Steel frame with a variety of finishes, tar and felt, metal panels, etc.
-Concrete systems with a variety of finishes (tar and felt, metal panels, etc.)

The consideration in this examination is the ability to reuse the existing roof structure for the first floor of the new addition. In some instances the roof may be in the same system as in the rest of the building, thus saving costs in adding this new "floor" and solving some construction problems. The costs of removing an existing roof and structure may be complicated by the need to relocate tenants below this work during construction.

The structural and partitioning systems described above may be used in a variety of combinations. The primary concern in the examination of the building is to determine the category of the construction type, which applies to the building's classification in the Ontario and National Building Codes. The classification is split into the general classifications of combustible and non combustible construction. It is determined in simple terms by the quantity and dimension of combustible material, that is wood used in its construction. A simple paraphrasing is that if wood other than as applied finishes, is used in the assemblies and is more than 1"x 2", then it is deemed to be of combustible construction. This is tempered by Heavy timber construction, as it qualifies as being considered equivalent to non combustible construction in some applications.

The classification of combustible and non-combustible construction, is used to determine the allowed height, floor and building area, fire protection systems and a range of other considerations. Under the National Building Code, a residential building in this classification will be limited to the allowed height of four stories if classified as combustible construction. The Ontario Building Code contains in Section Eleven, a number of conditions for combustible buildings, which waive some of the requirements and allow additions to be constructed under some conditions.

For those buildings governed only by Part Eleven of the Ontario Building Code significant allowances are made for existing conditions within the original building. In the words used in this section of the O.B.C. provision is made allowing an "alternative measure" or "a substitute for a requirement in another part of the Code...". Conditions attached to this section are, " the alteration shall provide a performance level that is at

least equal to that prior to the alteration." The alternative measures allowed in this section of the Code, "may be substituted for such requirement [of Part 3 shown in Table 11.2.3.A] where it is demonstrated to the chief official that compliance with the requirement is impractical because, (a) of structural or construction difficulties; or (b) it is a threat to the preservation of a heritage building." The "alternative measures" do not apply to the new extension. This part allows "alternative measures" for a number of items and which in part include in part the following:

Fire separations
fire resistance ratings
combustible and non combustible construction
labeled doors
requirements for non combustible construction
smoke alarms
types and configuration of exits
room sizes
area of unprotected openings
etc.

[ii] Foundation System

The considerations of the foundation systems of an existing building are the most difficult in the assessment of a building's capability in allowing additions. For most buildings, this area will not afford visual examination. The information concerning the size and construction of the footings may be contained on the original drawings and specifications for the building. Soil testing and exposing the footings is a fail safe method. However, in many cases investigated, preliminary assumptions based on a number of general conditions may be required.

- The assumptions in regard to live floor loads is that to previous code standards, prior to 1968 floor loads , would have been 30 lb. per square foot of habitable area in the City of Toronto.
- In some municipalities in lieu of a soil test, the assumption was made that the bearing capacity of the soils were 2 kips per square foot, where as the soils may have a 50-100% greater capacity.
- Soil tests if conducted on an unimproved site would have shown significantly less bearing capacity than after storm sewers, paving, etc. were installed and the site "dewatered".

These assumptions involve a substantial degree of risk and should only be made with expert professional advice and consideration.

[iii] Walls

Exterior Walls - The examination should start with the classification of the the exterior walls as load bearing structural construction or non load bearing assemblies. This consideration and the apparent width of the wall will help determine its ability to support additional loads. In load bearing masonry walls the dimensions of the openings, size of lintels, etc. should be considered in the determination of its structural capacity.

The general consideration should involve an assessment of the condition of the walls and the manner in which they have aged. This is of particular importance in masonry construction where the mortar joints should be examined and the cants or roof projections examined as to the requirements of repairs and replacement.

An examination and calculation of the insulation or "R" value will be required for a variety of future considerations. The 'R' value will affect the rehabilitation program for the existing units governing the decisions regarding the replacement, sizing, and choice of future mechanical systems. It will also affect the life cycle costing in determining the future carrying costs, rents and maintenance costs. In most instances, the "R" value, although low [in the range of 10 to 15] may not warrant life cycle costing projections the addition of insulation to the wall assembly. The addition of this layer will require new interior finishes, add costs to the interiors, and prevent the units from being occupied during renovations.

The single element in the exterior walls which will affect the life cycle costing and demonstrate the greatest improvement in energy conservation is the replacement of single glazed windows. In most older buildings the windows will also show significant degradation, rendering repairs is a short term solution to a continuing problem.

Interior Walls - The consideration in the assemblies used in the interior walls are in their general condition, fire separation ratings, and the ease or ability to accommodate alterations in future renovations. The low degree of "repairability" of plaster and wood lath disturbed during renovations will result in higher costs for final finishes.

[iV] Suite conditions

The considerations in this regard are secondary to the amount of disruptions that would be required by the replacement of mechanical and electrical systems during renovations. In these instances, it may be required that the finishes in every room will be disturbed and require patching, repairs, and painting throughout the entire building. The most costly areas for refinishing are the bathrooms which may need retiling after water supply risers are replaced. In most instances, older buildings will show their age in the kitchens. This may require the replacement of

cabinets, fixtures, and finishes.

[v] Parking Areas

A significant problem in all parking floors is the accumulation of salt in the concrete and its action on the rebars in the concrete. Parking structures constructed more than five years ago would not have contained preventative measures to resist the rusting action of road salts. In floor slabs bearing on the ground, this may not be a problem which would affect the integrity of the structure. Parking levels as raised floors may however, show significant degradation. The problem may be estimated by a simple drag chain test on the preliminary inspection of the building. The final extent of the problem can only be answered by more extensive and expensive core samplings.

[iv] Life Safety

This category examines those items which are regulated by the Building Codes, but not found in a specific category examined in this section of the Study. The specific requirements of these items may change with the requirements and interpretation of the Building Codes governing the project.

Exits - The width, configuration, and distribution of the the means of exiting, such as corridors, should be examined as to their conformance to the existing building, and with consideration to the change in classification with new additions. Particular atiention should be given to the separation and configuration of exit stairs, as these sections have been subject to change with each edition of the Codes.

Doors and Hardware - The requirements of this section have changed over the years and do not conform in the existing buildings. This will effect suite doors, doors in exits, as well as doors separating mechanical rooms, elevators, or common areas from the means of exiting. Local Building Officials may also require that these elements in the existing structure display fire rating labels from the manufactures.

Flame Spread Ratings- In some buildings the existing floor and wall finishes may not conform to present flame spread and smoke generation standards. This is of particular concern in regard to floor carpeting, elevator cab finishes, and wood finishes.

Fire Separations- This should be apparent as to the assembly and its conformance to Code regulations, even so, the concealed spaces should be considered as to where the fire separations may not

extend and conform to present Code requirements.

[vii] Mechanical Systems

This section deals with the mechanical support systems. It is divided into the sections that correspond to those required by the various Codes and For the operation of the Building. Specific regulation and requirements may be subject to a variety of Codes and governing authorities.

Heating - The majority of low rise buildings in Ontario were heated by steam or hot water heating in 1981. Electric heat was utilized in 27% and hot air in 16.7% [Clayton] in lowrise apartment buildings. Depending on the age of the building, the following effects should be examined: calcium and mineral deposits within the risers. This will result in the decreased capacity of the piping to transport the water or in the failure of the piping. This is of particular concern where steel or iron piping was used. The other effect may be that the valves used to regulate and balance the system may not be operable. The problem in a hot water system is to isolate the problems without affecting the replacement of the whole system.

The other critical examination of the heating system is the condition of the boiler or central heating appliance. The replacement of the heat source from oil to gas may show a short term return, but ignores a continuing maintenance problem with boiler tubes.

Domestic water - The consideration in the examination is also the build up of calcium and mineral deposits within these systems. Once again the failure to replace these elements will continue such problems as low supply pressures and a continuing problem of emergency repairs. Depending on a subjective consideration of the conditions of these systems, their method of installation, i.e. galvanized pipe, the decision may be to replace all or major parts of the system.

Ventilation Systems- The ventilation of the individual bathrooms may be by a mechanically aided ventilation system. In most instances the useful life is 25 years for this equipment. Additions to the top of a building will also cause disruption of these systems. The system should also be examined as to conformance with fire code requirements for fire dampers.

The ventilation system required for pressurization of

corridors in present Codes may not have been installed in the existing building. Consideration should be given to the condition of this equipment as well as to the provision of duct work in an existing building not containing these systems.

Standpipe and sprinklers - Standpipe and firehose cabinets may be required in view of the specific requirements when the additions are added to the building. The addition of sprinklers may be in specific areas such as garbage chutes or in regard to part Eleven of the Ontario Building Code, in order to place additions on to a building containing combustible construction.

Smoke and Heat Detection Systems - Consideration should be given to the governing Code requirements as to the need for integrated detection systems. These may be required for common and service areas, as well as in the suites. Specific requirements vary with the different codes as well as the size and classification of the building.

Garbage Disposal Systems - In many instances the original system was through incineration and may not be allowed by present Municipal Bylaws. The closures and separation of the garbage chute should be checked for compliance with current Code requirements.

Electrical Systems - The comments in this area of the study are dependent on the interpretations of local authorities and in projects funded by Canada Mortgage and Housing Corporation, to the National Building Code and its supplement "Residential Standards 1980". Therefore a consultant having experience with these codes and authorities will be necessary in determining specific requirements and regulations.

Electrical service - In most instances, the present building will not meet current requirements in the size and nature of the distribution of electrical services within individual units. The service may be undersized at 30 amps., not grounded at the outlets, and not supply the required split receptacles in kitchens and bathrooms. The assessment of the requirements by the governing authorities is of particular importance because of the impact on unit finishes required to re-wire a unit to current standards.

Smoke and Heat Alarm Systems - with the exception of Part Eleven of

the Ontario Building Code, smoke alarms in the individual units must be wired to the units panel. The central alarm and annunciator panel must conform to present requirements. In addition for projects funded by Canada Mortgage and Housing Corporation, [to the National Building Code and its supplement "Residential Standards 1980"] the requirement may be for heat detectors to be installed in required areas.

Emergency lighting- Again the current requirements may require additional or improvement to this system.

Voice Communication - The original systems in many buildings over 25 years old the original systems may be beyond repair and may require replacement. In some instances, the receiver station and the panel may be replaced without rewiring the entire system.

Vertical Transportation - In the majority of low-rise buildings, three and four stories in height, there will not be an elevator in the existing building. In those instances of where an elevator is contained in the existing building, it will probably be a hydrolic type that does not lend itself to an easy conversion for additional floors. In addition the current elevator cab and doors may not meet current code requirements. In short only the shaft may be reusable and all the equipment replaced. The replacement cost will be a minium of $65,000 for a five stop application. The elevator may be the single most expensive item in an "intensification" project and preclude the conversion of small buildings.

Amenity Area - In the selection of buildings for intensification, consideration should be given to the recreation amenity areas contained on the site. The dominant unit mix contained in the random survey of apartment buildings was of bachelor and one bedroom units. With this unit mix weighed to "non family" accomodation, the emphasis on active recreation areas for children may not be a consideration in the majority of examples. The need will be for passive seating or sunning areas. In most cases there is not a provision of an activity or party room in the existing building. This should be considered in the "intensification" as the unit mix of smaller units warrants this amenity.

Site Services- This must be examined in specific reference to the additional loads incurred through the intensification of the

use of the properties. The services that will be most affected are the electrical and water supply. The electrical by the up-grading of services to existing units, the additional units, and by the possible provision of electric heating to the additional units. The water service may be affected by the possible requirements for a stand pipe and sprinkler system in the building in addition to the increased load of the new units.

[viii] Profile of Low- Rise Apartment Building Profile

Age - The most recent segment, between 1961-75
This age shows the least need for major repairs in the groups prior to the category of "1976 and later"

The of the age of buildings complied in the -----Study indicates an average split between all Building age groups.
1945 and older- 33%
1946-1960- 37%
1961-1975-29%

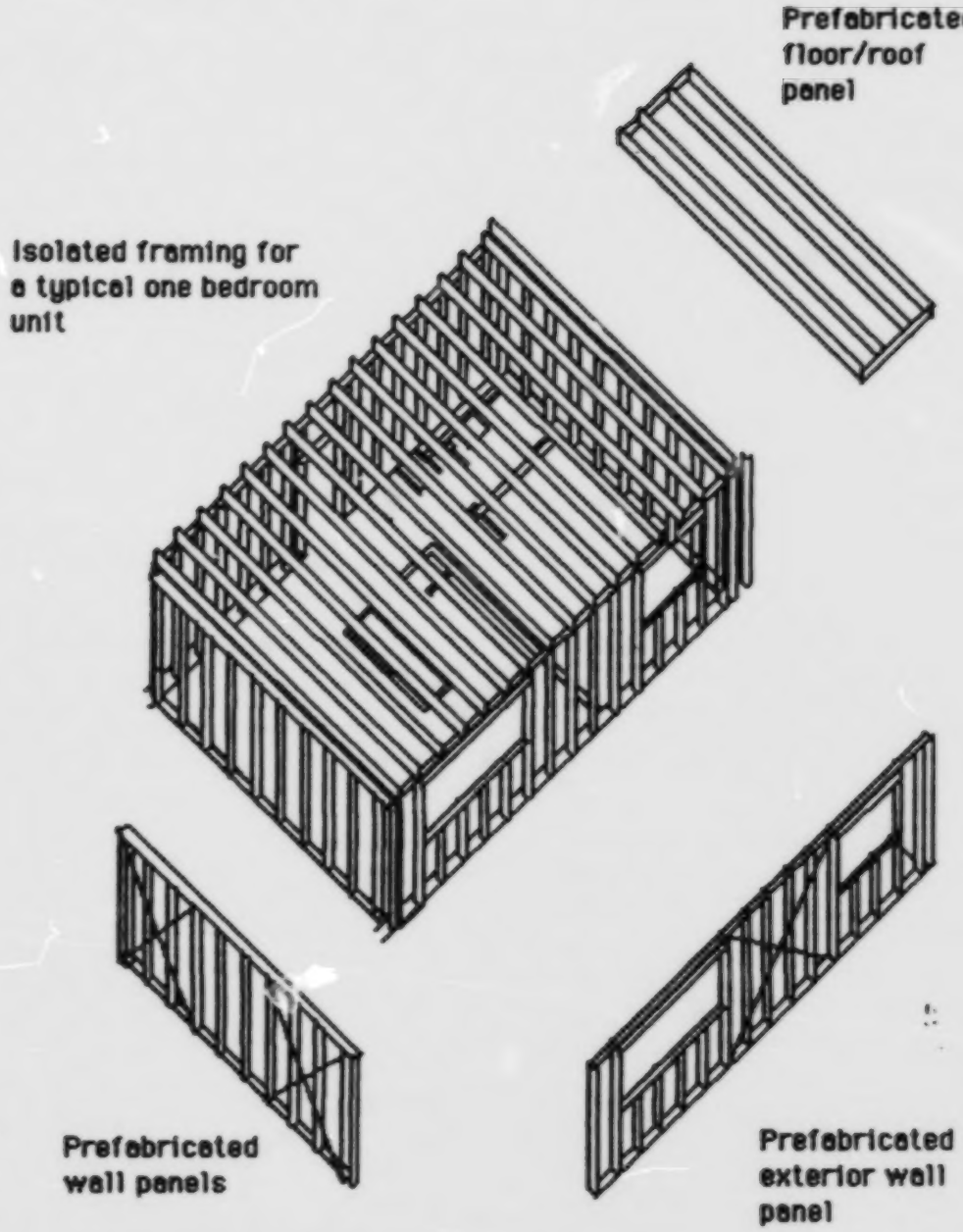
Therefore a representative grouping would contain, by age, a building from each of the age groups for the purposes of a detailed study of the conditions of existing buildings.

[ix] Site Considerations

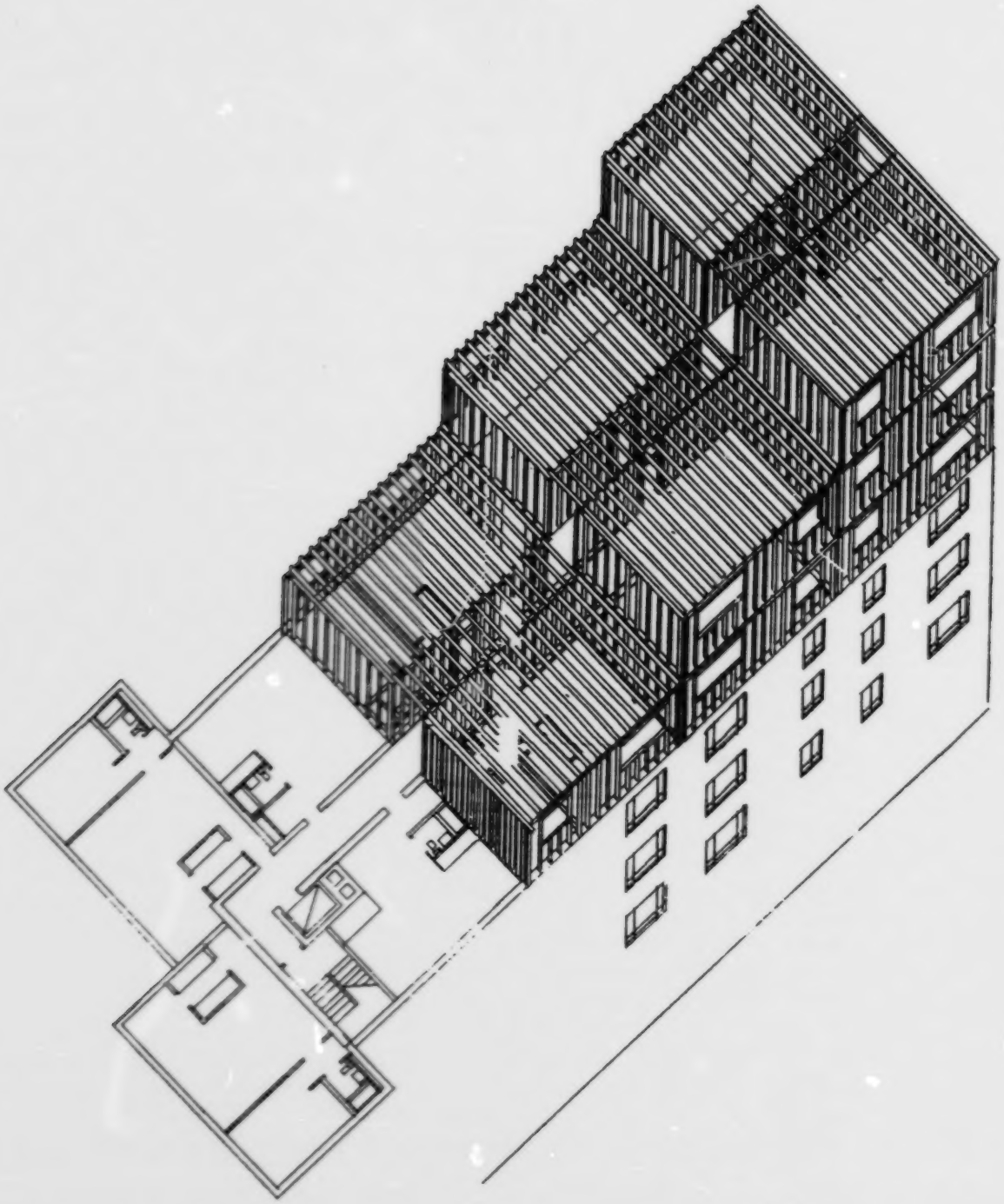
The optimum condition would be a small existing building on a large lot. As the densities indicate in the random sampling shown in table--, the densities vary. They range from 226 units per acre to 37 units per acre. The average in this sample is is 90 units per acre. Therefore the examples for future study should be chosen from the high, medium and low densities.

The zoning and municipal restrictions vary to such a degree that this category of consideration is difficult to apply to the selection of typical or example buildings. Therefore the selection will not use this category of considerations.

Diagram of the Framing for a Typical Unit


Prefabricated floor/roof panel
Isolated framing for a typical one bedroom unit
Prefabricated wall panels
Prefabricated exterior wall panel

Note; The diagrams do not show the full extent of the framing, bracing, and structure that would be required in a typical application



Framing of a Typical 3 Storey Addition

[x.] Outline Specifications

Division 1- General Requirements
The following percentages will be used to determine costs under this study:

Indirect Costs	6.0%
Professional Fees	12.%
Service Connections	0.75%
O.H.&P.	10.%
Contingency	3.%
Insurance	0.5%

Division 2 - Site Work
-demolition and removal of all interior partitions to allow increase in room sizes to NBC minimum as required
-removal of masonry walls
-new walkways and landscape planting
-connections to street servicing as required for increased capacity, new services, and up grading as required

Division 3 - Concrete
-new concrete floors or metal decking with wire mesh reinforcing (6"x 6", 6/6)
-repair of existing concrete floors and leveling
-resurfacing and leveling of balcony slabs
-restoration of parking garage areas with removal of damaged concrete as required

Division 4 - Masonry
-extension of elevator shafts as required
-repair and cleaning of existing brick masonry and repointing of mortar joints as required
-new brick to match existing

Division 5 - Metals
-all light guage metals for steel framing of load-bearing walls and floor joists
-16 & 18 guage 4" (100 mm) steel studs and 16 & 18 guage 8" &10" (200 mm & 250 mm) steel joists prepunched to accept mechanical and electrical services
-material to CSA standard 136-1974 amended April, 1982 and CGSB 7-GP-1m
-steel to ASTM A446 with galvanized G60 coating minimum grade A of 33ksi yield for 0.036"x.048" material
-floor bridging to be 6" (150 mm) or 8" (200 mm) steel stud each span
-wall channel bracing to be 1.5" (38 mm) with 1 row per 9'-0" (2700 mm) wall height

-floor deck to be minimum 24 guage metal pan (1.5" (38 mm) corrugated metal deck preferable for fast track construction)
-all members to be of welded or screwed connections to CSA standards.

Division 6 - Wood & Plastics
-plastic laminate counter tops minimum 3/4" (20 mm) thickness
-wood trim of minimum 2.5" (64 mm) width
-storage lockers with 1'x1' (25x25 mm) wire mesh
-standard wood frame construction in combustible buildings for repair work as required

Division 7 - Thermal & Moisture Protection
-insulation in exterior walls to be 4" (100 mm) fibreglass batt insulation CMHC #5650
-vapor barrier of polyethlene 6 mm thickness
-4 ply built-up roofing of #15 felts and type 1 hot asphalt at 1 kg/m^2 each ply
-metal edged flashings, prepainted
-joint sealants type 2 class B with joint filler at windows and foam type at existing window replacement

Division 8 - Doors & Windows
-exit doors, frames, and closures of 1.5 hour U.L.C. approval
-suite doors of solid wood 20 minutes fire ratings with rated closures
-metal windows with anodized or baked acrylic finish, extrusion as to CSA HA 0.5-G510 Alcan 505
-hermetically sealed glazing units with 5 mm panes and 12.7 mm air space

Division 9 - Finishes
-cement stucco on fibre mesh mechanically fastened to metal furring channels set in rigid insulation
-gypsum wallboard, 1/2 " (12 mm), 1/2" (12 mm) type-X, and 5/8" (16 mm) for increased fire protection as required
-walls and partitions as follows:

LOCATION	ASSEMBLY	FIRE
corr.-suite & suite-suite	1 layer 5/8" 2 layers 1/2" 4" stud 2" fibre ins.	1 hr
interior partitions	1/2" ea. side 2 1/2" stud	NA
exit stair		2 hr

exterior wall	1/2" type-X 4" 16 ga. stud	
floor-ceiling	10" 18 ga. joist 24 ga. st. deck 2 1/2" conc./w mesh 2 layers 5/8"	2 hr
floor-ceiling	10" 18 ga. joist 24 ga. st. deck 2 1/2" conc./w mesh 1/2" st. furring channels 1 layer 1/2"	1 hr

-vinyl seamless flooring in kitchen and bath areas
-wood parquet flooring with 2 sealer and 1 coat or varathane
-carpet of 28 oz.
-painting consisting of 3 coats (1 prime + 2 fin.)
-suspended ceilings in laundry and storage rooms

Division 10 - Specialties
-toilet and bath accesories consisting of medicine cabinets, towel racks, toilet tissue racks
-plastic signage as required
-postal boxes to complement existing

Division 11 - Equipment
-washers and dryers are not included
-garbage compactor of rotor bag type, 5 or 6 bag capacity

Division 12 - Furnishings
-kitchen cabinets and vanities with plastic laminate finish

Division 13 - Special Construction

Division 14 - Conveying Systems
-existing elevators to be extended for additional floors and/or added as a new system
-updating of door closing hardware, closures, and hall stations
-provisions for disabled persons

Division 15 - Mechanical
- replacement of all galvanized hot water piping in risers and branches
- provision of fire hose cabinets and equipment
- sprinkling of areas as required by codes
- updating of kitchen and bath exhaust equipment
-pressurization of corridors and exit stairs as required
-existing heating system to be extended to accommodate new units

with upgrading or replacement of boilers and burners
-conversion to gas if oil

Division 16 - Electrical
-new electrical panels in existing suites upgraded to 60 amps circuit breakers
-ground fault receptacles provided in bath and kitchen areas
-heat and smoke detectors in each unit
-upgrading of intercom and fire alarm system including pull stations and annunciator panel
-emergency lighting in corridors and exit stairs

IV. Scheduling

Existing Suites:

To retain the existing tenants during renovations the alterations to existing suites must be orchestrated to cause as little disruption as possible. The tenants will only be required to vacate their unit during the refinishing of the wood parquet flooring which will include sanding, or buffing, and varathaning. All other work within the suite will be performed to keep disruption to a minimum.

All work within a suite will be completed in a 8 day period as follows:

DAY	WORK IN PROGRESS
1	Replacement of windows, replacement of galvanized piping (2 suites per day)
2	Trim, insulate, electrical work
3	Kitchen Counters, removal of wallpaper, demolition as required
4	New vinyl flooring, drywall and stud, repair and patch drywall with 1st coat
5	Kitchen cabinets sanding and replacement as necessary, vinyl flooring, 2nd coat on drywall, patch wood flooring with sanding
6	Kitchen cabinet finish, paint suite, wall tile, and 1st coat sealer on floors
7	Wood floor sealed and varathaned
8	Wood floors additional coat if required. Inspection and deficiencies

Total length of work:

27 Walmer Road: - 32 suite in 24 days (5 weeks)
688 Sheppard Ave. - 9 suites in 13 days (3 weeks)
745 Bloor St. - 35 suites in 26 days (5 1/2 weeks)

New Construction

The following is the estimated length of construction for the three projects:

27 Walmer Rd - 16 suites - 5 1/2 months
688 Sheppard - 10 suites - 4 1/2 months
745 Bloor St. - 8 Suites - 4 months

A typical schedule for this work showing only the major items would be as follows:

WEEK	WORK IN PROGRESS
1	Site Preparation & Material delivery
2	Commence Light Metal Frame Fabrication
3	Remove existing Roofing and set load-bearing walls
4	Framing of walls, floors and roof
5	Enclose structure with exterior insulation and apply roofing
6	Final L.M.F. connections
7	Rough in for Mechanical and Electrical
8	Set pipe chases & pour concrete floors
9	Installation of Windows, Mechanical and Electrical work
10	Mechanical and Electrical
11	Installation of insulation & Vapour Barrier
	COMMENCE WORK WITHIN EXISTING SUITES
12	Exterior fibre and stucco, metal flashing
13	Commence drywall work
14	Drywall and final taping
15	Commence finish flooring
16	Final Finishes
17	Interior trim and finish carpentry
18	Kitchen cabinets
19	Commence painting and sprayed ceilings
20	Painting and clean-up
21	Equipment delivery
22	Deficiencies

V. Costing Information

The costing figures included in this report have been set up as per the 16 Division Canadian Construction Specification format. The individual amounts have been calculated based on accurate square footage take-offs for all new construction. For existing suites the majority of the work is for repairs and refinishing and an attempt has been made, based on a preliminary site inspection, to establish accurate percentages for the

different items listed as unit costs.

Unit prices are divided into material and labour for most items. The material rates are current figures based on Toronto area prices for the autumn of 1985. An average labour rate has been established at $22.50 per hour including the contractors overhead and profit. The individual unit prices also include10% for the contractor's O.H.&P.

In some instances incomplete information has required us to make assumptions in respect to certain quanities listed on the charts. These assumptions have been based upon previous examination of similar buildings of comparable size, age, and state of repair.

VI. Available Compatible Systems and Characteristics

The following materials and systems are compatible with light guage metal framing. Many of the items listed are not included as part for the three apartment buildings in this study.

Division 1 - General Requirements
All systems as listed below comply with all applicable CSA standards.

Division 2 - Site Work

Division 3 - Concrete
Glass Reinforced Cement Panels (G.R.C.) Panels - available in 1/2" to 3/4" thickness from "Imperial Oil limited" and "Atlas Building Materials". Lightweight precast concrete panels. Standard 3000 psi concrete for floors over metal decking.

Division 4 - Masonry
Brick - standard masonry brick veneer with "Bailey Metals" adjustable wall ties. Face brick - panels installed with adjustable clips to loadbearing steel studs. Concrete block for masonry bearing.

Division 5 - Metals
"Hambro" steel floor joists available from "Canam Hambro"
Open Web Steel Joists (O.W.S.J.)
Structural Steel framing consisting of H.S.S. sections, W.F., I beams and steel angles and columns for long spans.
Light Guage metal framing available from "Bailey Metal Products, Lora Lea Steel, Eastland Metals, Brockhouse and Thermosteel"
Steel roofing shingles on horizontal furring channels available from "Decra" distributed by Perma Roofing Inc.
Corrugated or sheet steel roofing available from "Robinson, Armco, Westeel Rosco" for decking and sloped roof areas.

Standard aluminum siding on furring channels available from "Alcan, Reynold Commercial Siding"
Metal liner panels available from "Armco".

Division 6 - Wood and Plastics
Plywood panels for walls and /or intermediate floors within dwelling units.
Wood shingles and shakes on horizontal wood furring.
Horizontal or Vertical siding/clapboards on wood furring.
"Auralite" fibreglass panels available from "Asbestos Building Supply Limited".
Standard wood construction may be incorporated with the steel stud building systems in buildings not exceeding 3 stories in height

Division 7 - Thermal and Moisture Protection
Fibreglass batt insulation from "Fibreglass Canada Ltd".
Rigid insulation from "Dow Corning Ltd".
Stucco siding systems available from "Outsolation Systems of Canada, Gazelle Systems, Gemite Ltd".

Division 8 - Doors and Windows
Thermally broken frames with sealed units available from "Alcan" or other manufacturer

Division 9 - Finishes
Drywall in standard or fire rated types.
Gypsum lath and plaster
Wood paneling
Glass Reinforced Cement Panels available from "Imperial Oil Ltd, Atlas Building Materials"
Suspended ceiling Systems available from "Armstrong"
Metal strip ceilings

Division 10 - Specialties
Medicine cabinets and other bath accessories.

Division 11 - Equipment
Garbage Compactor from "Serquip" Type Lundia 3 to 6 bag capacity

Division 12 - Furnishings

Division 13 - Special Construction

Division 14 - Conveying Systems
Elevators from "Otis, Armor, Montgomery, etc."

Division 15 - Mechanical
Prepunched studs and joists allow the installation of mechanical services quickly and inexpensively compared to standard combustible or noncombustible construction.

Division 16 - Electrical
Plastic grommets allow electrical wiring to be installed quickly within units and prepunched members allows the speedy installation of metal conduit.

VI. Conclusion

Assessing the ability of an existing building to receive additional floors requires a number of assessments to be made based on the ability and experience of the consultants to anticipate future conditions. It is their subjective "judgment" based on visual examination that is critical. The condition of the building in regard to its immediate physical condition is the first consideration in terms of weather barriers, interior finishes, and mechanical systems.

The Codes, governing authorities, and permits required to renovate the existing units and extend the building are of primary concern in judging the extent and cost of renovations required to the existing building. The preliminary visual examination of the structure should reveal the extent of these requirements, or reveal the need for investigation and testing to settle outstanding questions.

The planning constraints on each project will vary. In general the simple density calculation may indicate that the majority of buildings can accommodate an additional floor within the present zoning. However this may not describe all the zoning constraints on the site. These may involve setbacks, parking, access, open area, units per hectare, minimum frontages, etc. It may be assumed that as these buildings were built some years ago, that the present building and it's additions will not conform to all zoning requirements. Therefore the majority of buildings will require variances from the present requirements even though, with the additions, they may conform to the density measurements.

VII. Study Selection

The next sections of the study will deal with the sample projects chosen to illustrate the "intensification" of existing buildings. Three projects are shown in detail and a fourth has been added to the financial feasibility section for comparison. The selection of the three projects for detail examination was not to illustrate the "intensification" process at its optimum. These were chosen to examine the "average" conditions in the Toronto area. The inclusion of the forth example for costing and financial

feasibility was to fill out the range of possible intensification examples and to illustrate the potential of this thesis.

The three examples were chosen to demonstrate the range of potential projects. This included an example of a simple three story building from the 1960's era of construction, a complex four story building in an urban location from the 1950's, and a wood frame, or combustible construction, building from the pre war era. The zoning requirements for the additions were not a criteria on the condition that these requirements could be considered to be typical for the general class of building. The forth example was included to demonstrate the potential of a three story addition in regard to the financial impact that this degree of intensification would have on a project.

Stage II

Part D: 27 Walmer Road, Toronto

I. Introduction, and Intent
II. Proposal, General Description
III. Site Statistics and Present Zoning
IV. Building Statistics and Description
V. Proposal
VI. Proposal- General Description
VII. Proposal- Revised Statistics, Site and zoning
VIII. Proposal- Building-configuration and description
IX. Proposal- Building- scope of work.
X. Proposal- Building-costing

I. Introduction, and Intent

The purpose of this example is to permit the conversion of the building to a standard, as provided under the C.M.H.C. programs for social housing. This new "co-op" will include the present tenants and with the addition of new units, enable new tenants to enjoy this form of tenure. The proposed conversion, renovations and new construction are proposed to be done without relocating the present tenants.

To allow conversion of the existing building, it will be required to conform to current O.B.C. and C.M.H.C. standards. This will necessitate extensive renovations to the existing units, including the replacement of windows, doors, kitchens, interior finishes. Many of these items are due repairs and replacement of existing mechanical systems.

To improve the economic viability for a CMHC assisted co-op requiring the renovation the existing building, the additional suites will be added to the apartment building. The addition of these new suites will average the base mechanical system replacement costs over a greater number of units, and will use the "land cost" contribution of the new units to reduce the "per unit renovation costs" of the existing units. The additional units are the key to the viability of the project.

II. Proposal, General Description

The building is located half a block north of Bloor Street, one block west of Spadina. The area is well served by public transportation, with a subway station at Spadina and access to both the Bloor St. LIne

and the Spadina Line. A retail district, schools and community facilities are available in the neighborhood. The additional units prepared for the building would not substantially affect the demand for local services.

The surrounding buildings include rental units in apartment buildings and renovated houses, condominiums and farther north on Walmer Road are older single family homes. Several of the adjacent buildings are taller than 27 Walmer Rd. indicating that visually, the proposed addition complements the existing neighborhood.

The existing four story apartment building, built in 1957, contains at present 32 bachelor and one bedrooms units. Its present configuration provides 31 indoor parking spaces in underground garages. Common areas presently include laundry room, locker room, and a storage room in the basement. At the present time the G.F.A. or density of the building is below that allowed in the present zoning.

The configuration of the Building and its present sound structural condition lends this building to more intensive use. The parking is on two levels and will provide adequate parking areas for the apartments without requiring the conversion of valuable amenity areas at grade to surface parking.

III. Site Statistics and Present Zoning

The Building is contained in an R3- Z4 zone. Changes to the Building By-laws since the time at which this building was constructed have rendered the present building as a continuing non-conforming use in some respects. The present building does not conform to minimum front and side yard setbacks, angular plane restrictions, provisions for landscaped open space, and driveway configurations.

Site Statistics of the present building are as follows:

Gross Site Area	approximately.	1,638.0 sq. metres
Gross Floor Area		
Existing Building		2,158.0 sq. metres
Site Coverage		40.3 % (645 s.m.)
Building Height	4 stories (11.50 m)	
Landscaped Area		37.0 %

Unit type and size of the existing building

Type	Number	Approximately. Size
Bachelor	10	37.4 sq. metres
One Bedroom	22	54.5 sq. metres
Total	32	

IV. Building Statistics and Description

The apartment building is of masonry load bearing construction in the "International" style. The floors are open web steel joists with poured concrete, bearing on the exterior masonry walls and on the interior corridor wall. The heating system is a hot water radiation system with a central boiler in the basement. The exterior cladding is brick and single glazed steel sash windows.

The state of the building requires repairs to and rehabilitation of the existing units. The majority of this work is required by the replacement of vertical mechanical system risers. As this work will disturb interior finishes, the scope of the renovations will increase. Energy conservation measures required will be the replacement of windows, doors and the heating plant. The replacement of the ventilation systems, provision of new smoke and heat detection systems are required to meet current Code standards. In general the structure of the building is sound but the mechanical systems are past their intended life span and below current Code standards. The replacement and repair of these systems would equal more than half the present market value of the building. To replace these items in the private market will require the rents to be increased accordingly.

The configuration of this four story building is that the bottom or grade level is partly set below the surrounding average grade. This floor area contains two apartments and approximately 16 parking spaces. The basement level contains additional parking spaces, utility room areas and mechanical service spaces.

The condition of the building varies from sound structural conditions to the requirement for replacement of major portions of the mechanical and electrical systems. The risers in the heating, domestic hot water, and cold water systems need constant repair and provide substandard pressures. The main electrical distribution system and portions of the unit distribution system will also require replacement due to changes in building standards and the Codes. The ventilation system for pressurization of corridor, etc. will also be replaced. In

addition the fire protection systems will require a new smoke/heat detection system and an emergency lighting system will be installed to meet Code requirements.

Renovations to other areas of the building will be the replacement of all windows and doors. Repairs to balconies, interior floor structure, and various other items. Since the replacement of the mechanical systems will disturb the interior finishes in the units, extensive redecoration and refinishing will be necessary. Minor repairs to the existing parking garage will be necessary.

The entrance to the grade level parking area will be reconfigured to allow more landscaped areas and to provide visitor parking at grade. In addition, changes will be made to improve the quality of the landscaped area and to provide a passive play areas for the building's tenants. Access for the disabled will also be provided.

V. Proposal

The new construction will include the addition of 14 new bachelor, one, and two bedroom units accommodated in two new stories built on top of the existing structure. In addition, two new units will also be constructed in the south portion of the ground floor currently used as a parking area. The result will be a 48 unit building containing a proportion of "family", two bedroom units.

The new configuration is based on the desire to improve the unit mix to include the maximum number of "family units" possible. Therefore instead of simply extending the existing floor plan and present unit mix, the potential number of units has been reduced to accommodate two bedroom apartments. The other reduction of units has been in the design of "step backs" in the fifth and sixth floor additions on the north side of the building in order to lessen the shadows cast by the additions. The maximum number of units possible without these setbacks would be approximately 18 units on the fifth and sixth floors. The reductions were made to lessen the opposition to variances required for the the project.

VI. Proposal- General Description

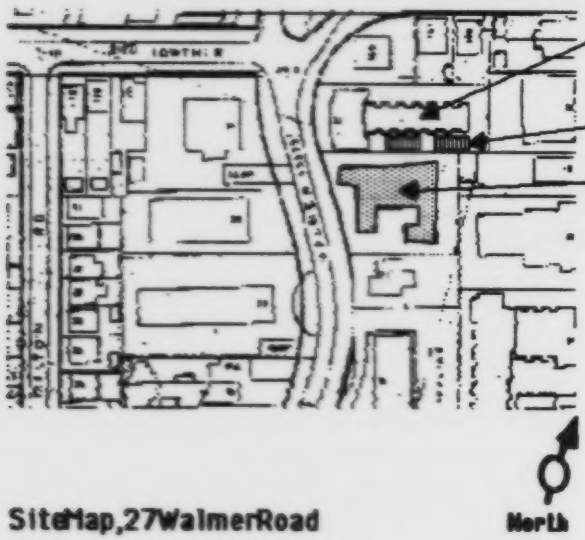
The proposed additions and renovations to the building will result in changes to the statistics of the building. The additions are onto the top floors of the existing structure, therefore the site coverage calculations, etc. will not be affected.

The garbage disposal system will be improved from the current arrangement. A compactor unit will be provided in the mechanical room by the existing garbage chute, replacing the outlawed incinerator originally installed in the building. The garbage would than be bagged and removed for curb side pickup.

The nature of the additions to this site will not affect the existing conditions in terms of setbacks, landscaped open space, or the provision of amenity areas. Visually the additions will result in a perception of density resembling neighboring apartment buildings on Walmer Road.

As was previously stated, intensification of this site provides additional housing in an area with adequate commercial, transportation and social infrastucture without producing a distorting demand on such services.

The impact on neighboring properties will be minimal. To the east and south the issues of overview or crowding will be minimized by the configuration of the additions onto the top of the building. These areas will not, in the opinion of the author, be affected.



Site Map, 27 Walmer Road

The potential for some disruption to neighboring properties may exist on the northern property boundary, due to the existing building (27 Walmer Road) and the configuration of the neighboring

Condominium (31 Walmer Road) building. The apartment building is approximately 12 feet (3 metres) from the north lot line. As the neighboring property was developed in the 1970's, the builder chose to configure the townhouses, which comprise the Condominium, so that they face this common boundary line. At the present time, the existing apartment building blocks the view and overshadows the principal windows of these townhouses. As a result of the existing condition, this proposal for an addition to the apartment building responds to this situation with measures to reduce any potential impact. The additional stories to be added to the apartment building are to be set back from the north side of the existing apartment building. The intent of these set backs is to reduce the direct shadows of the additions to the building cast onto the neighboring properties, and to reduce the visual impact of these additions. This change from simply extending the present floor plan into the addition, were made after consideration of the proximity of the two buildings.
This diagram illustrates the sight lines from the greenhouse and the manner in which the additions are set to the South. The result of this configuration is that the additions do not dominate the neighboring properties and do not create a canyon effect between the buildings.

The revisions that have been made through the design development stages for the elevation of the North side of 27 Walmer Road. These revisions have resulted in the loss of four units or approximately 1800 sq. ft. of area from the building. Furthermore, the fifth and sixth floors are now cantilevered to the south and additional balcony areas have been added; thus, the result is an additional cost to the project in order to minimize the shadowing effect on the neighboring greenhouses during October and Febuary.

VII. Proposal- Revised Statistics, Site and zoning

The density of the building will increase and exceed the allowable coverage by approximately 3%. The other aspect of the present zoning that will be affected by these changes will be the allowed "units per acre" density of the site. As the present zoning anticipates that an apartment building will contain a mix of units and favors larger family units, the present mix of single housing units distorts the unit per acre measurements. The majority of additional units are two bedroom family units, but the total number of new units will exceed the allowed by 15 units.

Gross Floor Area

Existing Building	2,079.0	sq. metres
Proposed Additions	1,291.0	sq. metres

Total Gross Floor Area 3,370.0 sq. metres

The new construction will include the addition of 14 new bachelor, one, and two bedroom units accommodated in two new stories built on top of the existing structure. Two new units will also be constructed in the south portion of the ground floor parking area. One existing unit will be converted to a two bedroom unit. The parking requirement will be satisfied by the lower parking garage.

Type and size of proposed units:

Type	Number	
Bachelor	2	42.0 sq. metres [average]
One Bedroom	3	43.0 sq. metres [average]
2 Bedroom	11	66.0 sq. metres [average]
Total	16	

Total number of units: 48

In the proposed conversion to a cooperative, the standard for the anticipated parking demand that has been used is that for "assisted housing" of the central area for the City. In this context the calculation is for 26 parking spaces.

The building will be renovated to accommodate the disabled. An access ramp will be constructed at the front entrance to the building and several units will be built for wheelchair living.

VIII. Proposal- Building-configuration, scope of work

The provision of a two story addition is made possible with the use of lightweight building systems which utilize such assemblies as lightweight metal framing, ceramic face brick and insulation systems, fiber cement stucco, sheet metal roof systems, and other building materials which are approximately 30% of the dead weight of conventional systems. The existing building lends itself to the additional units by virtue of its age. At the time that this building was constructed the codes calculated live loads at 50 lb. per sq. ft., and structural strengths for masonry or concrete at an additional 10% of today's standards. From the preliminary examination, it is technically possible to add two stories onto this building without requiring additional structural modifications to the existing structure.

As stated in this brief, the key to the conversion of this apartment building to a cooperative is the addition of units to the

project. This results in a number of variances to the existing zoning by-laws. The majority of the exceptions are due to the nature and configuration of the existing building.

The existing building encroaches on minimum front yard and side yard setbacks and penetrates the 60° vertical angular planes as shown on the drawings for portions of the front elevation. The proposed addition will be built on top of the existing structure and will therefore encroach on these same setbacks and planes. For the above reasons the proposed addition will also be erected further than 17.0 metres beyond the minimum front yard lot line setback requirement. The height of the building will be 16.93 metres which will exceed the maximum permitted (11.6 metres) by 5.33 metres as stated on the examiners notice for the areas within the angular plane. However, the building height restriction for the site is 13.7 meters and the building will exceed this by 3.23 meters (i.e. one storey).

The gross floor area of the total building will be 3,370.0 sq. metres which will exceed the permitted gross floor area by 100 sq. metres.

The landscaped open space will increase slightly from the present amount to 42% of the lot area which will still be less than the minimum required amount of 50%.

The 26 parking spaces provided in this assisted housing project will be less than the standard by-law requirement of 49 spaces. However, because of the assisted housing status of the proposed cooperative this amount should be acceptable in that it conforms to amendments proposed for parking standards in assisted housing. The existing driveway and ramp to lower garage will be retained and will be less than the present width requirement of 5.5 metres. Access to and from the apartment house by vehicular travel will remain as it is presently configured.

The proposed total of 48 dwelling units will exceed the "unit per hectare" maximum permitted of 33 units by 15.

IX. Mechanical/Electrical

In addition to the description of the Mechanical and Electrical

work, Division 15 and 16 on Page 9 Part D please note the following:

- Pressurization of stairs and corridors is not needed for smoke control.
- Garage requires a sprinkler system and ventilation.
- Heating system for the new top floors should be independent from the existing building.
- Domestic water heating for the top floors shall not be extended from the existing risers.
- Water piping distribution for the new top floors shall not be extended from the existing risers.

X. Structural

The subject building is a 4 storey load bearing building basically using the exterior wall and an interior corridor wall. The exterior wall is 4" brick and 8" block backup. The main interior wall is concrete block carried by steel beams and steel columns from the second floor to foundations. The second to roof consists of 2' 2" concrete slab on a 26 sage steel pans on OWSJ's at 24" o/c. The floors cantilever out to form balconies.

The ground floor slab is (plus or minus) 8" poured concrete slab carried by steel beams. The slab has been affected by road salts carried by vehicular traffic and is delaminating in many instances. This will require repairing and resurfacing plus installation of drains.

The structural beams appear to be in very good condition.

Ramp to the basement floor - concrete walls are in good condition but block over for 3 courses needs replacing.

Sub-basement to exit stairs and retaining walls are in good condition.

Rear stairs are in good condition. Blockwork over for 5 courses need replacing and/ or repair.

Front parapet walls are brick and need some attention.

Brick retaining walls need to be replaced or rebuilt. Outside concrete steps need some repair to surface.

Foundations appear to be in good condition as no settlement or

debrimental cracks are visible on the building.

The exterior load bearing walls have large windows with small piers between, e.g. 5'0" of pier carries 21.3' of wall with the resulting pier stresses of 210 psi. An additional two floors can be added but exterior piers will have to be reinforced. This can be achieved by pressure grouting the concrete voids in the block work.

A soil test will be necessary to try to justify an increase in the soil bearing capacity of 30% to avoid having to underpin existing footings due to two floors of extra load. This test should be carried out first.

XI. Proposal- Building- scope of work.

Division 1 - General Requirements
Bidders should include for:

Indirect Costs
Professional Fees
Service Connections
O.H.&P.
Contingency
Insurance (for performance bond and general comprehensive insurance)

Division 2 - Site Work
Includes reinforce concrete ramp for the disabled at front entry, outdoor patio at rear of building and landscaping in central court area. New paving and walkways are provided as well as concrete retaining walls and steps to below grade units.

Division 3 - Concrete
Minor repairs are required in the parking garages and to the exterior parking ramp. New 2 1/2 " (38 mm) concrete floors are required for the additions. Minor repairs are required to level and resurface exterior balconies.

Division 4 - Masonry
New brick is required to match existing up to the sill level of the first floor addition and to extend the elevator shaft the additional 2 stories. Repointing of the existing brick is required in particular at the roof level and the east elevation.

Division 5 - Metals

All new construction for additions are to be light gauge metal framing set on the existing load-bearing walls. New metal balcony railing are required for the new units.

Division 6 - Wood and Plastics
New plastic laminate countertops are required in the existing kitchens and the laundry area. New wood lockers with wire mesh are to be provided for each new unit. Existing kitchen cabinets are to be refinished with sand and stain and/or replaced.

Division 7 - Thermal and Moisture Protection
Full batt insulation is to be provided in all exterior walls as well as 1 1/2" (38 mm) rigid insulation under the stucco finish.
Between suites and between public areas and suites 2" (50 mm) of acoustical insulation is provided.
The new roofing is to be a standard 4 ply built up roof with prepainted metal flashing.

Division 8 - Doors and Windows
Doors to existing suites are acceptable and comply with 20 minute fire requirements but new closures are required. All new doors, frames, and closures must have U.L.C. labels.
All windows to be replaced with thermally broken frames and sealed units.

Division 9 - Finishes
Minor alterations are required to the existing units to comply with minimum unit sizes. As well finishes will be disturbed in the bath and kitchen areas during riser replacement and window installation. Patching to these areas will be required. New partitions are to be 1/2" (12mm) drywall on metal studs. A percentage of the units will require new vinyl flooring in the kitchen and refinishing of parquet wood floors with sanding, sealer and varathane. Wall tiles are to be replaced in bath areas disturbed during riser replacement. New carpet is required in corridors and lobbies throughout. Suspended ceiling are required in existing laundry rooms and basement hallways.

Division 10 - Specialties
New bath accessories are required for the new apartment units.

Division 11 - Equipment
The existing incinerator chute will be repaired and connected to a new garbage

compactor installed next to the boiler room in the basement.

Division 12 - Furnishings
New kitchen cabinets will be installed in all new suites.

Division 13 - Special Construction

Division 14 - Conveying Systems
The elevator must be extended to accommodate the 2 new floors.

Division 15 - Mechanical
All galvanized hot water risers and branches will be replaced throughout the building. A percentage of valves on existing rads will require replacement as well. The existing boilers and burners will be replaced and converted to gas. Lines will be extended to service the new units. Kitchen and bath areas require new exhaust equipment and exit stairs and corridors require pressurization for smoke control. All firehose cabinets will be updated and sprinklers will be installed in new locker rooms, new garbage room and garbage chute.

Division 16 - Electrical
The existing fire alarm system and intercom system will be updated. Each unit will have new smoke and heat detectors. Emergency lighting units will be provided in the exit stairs and corridors. Ground fault receptacles will be installed in all kitchens
and bath areas.

XII. Proposal- Building-Costing

	Existing	New
General Requirements(1)	$42,400.	$74,300.
Site work(2)	$3,000.	$0.
Concrete(3)	$1,200.	$32,400.
Masonry(4)	$25,900.	$23,100.
Metals(5)	$400.	$93,600.
Wood & Plastics(6)	$0.	$3,900.
Thermal & Moisture Protection(7)	$1,000.	$50,600.
Doors & Windows(8)	$132,200.	$91,700.
Finishes(9)	$55,300.	$148,200.
Specialties(10)	$400.	$2,400.
Equipment(11)	$13,400.	$24,300.
Furnishings(12)	$0.	$0.

Special Construction(13)	$0.	$0.
Conveying Systems(14)	$0.	$58,000.
Mechanical(15)	$77,500.	$87,600.
Electrical(16)	$93,400.	$48,300.
Totals Div. 1 - 16	$403,700.	$660,400.
TOTAL	$1,064,100.	

	1	2	3	4	7	8	10	11	12	13
1									Existing	New
2							General Requirements(1)		$42,738.20	$68,622.51
3							SiteWork(2)		$3,002.35	$0.00
4							Concrete(3)		$1,202.50	$32,406.75
5							Masonry(4)		$2,445.29	$6,987.60
6							Metals(5)		$111.60	$55,483.97
7							Wood & Plastics(6)		$0.00	$3,882.45
8							Thermal & Moisture Protect'n(		$994.59	$50,624.48
9							Doors & Windows(8)		$132,186.56	$91,723.20
10							Finishes(9)		$55,346.97	$148,231.14
11							Specialties(10)		$352.00	$2,404.50
12							Equipment(11)		$13,373.25	$24,255.00
13							Furnishings(12)		$0.00	$0.00
14							Special Construction(13)		$0.00	$0.00
15							Conveying Systems(14)		$0.00	$58,000.00
16							Mechanical(15)		$77,504.00	$87,630.75
17							Electrical(16)		$93,376.00	$48,348.00
18							Totals Div1 - 16		$379,895.10	$609,977.83
19									TOTAL	$1,058,495.44
20	GENERAL REQUIREMENTS(1)								Cost/Unit	$22,051.99
21	Construction Value							$1,063,902.99		
22	indirect costs			6.00%				$63,834.18	$63,834.18	
23	prof. costs			12.00%				$127,668.36	$127,668.36	
24	service connections			0.75%				$7,979.27	$7,979.27	
25	permit costs (75% actual cost)			1.00%				$7,979.27	$7,979.27	
26	O.H.&P.			10.00%				$106,390.30		
27	contingency			3.00%				$31,917.09	$31,917.09	
28	insurance	100%	perf.bond	0.50%				$5,319.51	$5,319.51	
29										
30	TOTALS	not included in costs shown below						SubTotal	$244,697.69	
31								Per unit Cost	$5,097.87	

	1	2	3	4	7	8	10	11	12	13
32	ELEMENT	code	elem. des.	unit des.	unit price	labour	quanity	materials $	Labour (HRS)	Division Totals
33										
34	SITEWORK(2)									$0.00
35	demolition		int. part.	SF	$0.10	0.03		$0.00	0	
36			conc. walls	SF	$0.20	0.06		$0.00	0	
37	backfill			CUFT				$0.00	0	
38	grading			CUFT				$0.00	0	
39	sod			SF	$0.15	0		$0.00	0	
40	lockstone			SF				$0.00	0	
41	turfstone			SF				$0.00	0	
42	conc. pavers		2'x4'	SF				$0.00	0	
43	asphalt paving	sup & inst	1 layer 2"	SF	$0.42			$0.00	0	
44	CONCRETE(3)									$32,406.75
45	formwork			SF				$0.00	0	
46	bracing		2"x4"	SF	$0.40	0.025		$0.00	0	
47	plywood		3/4"	SF	$0.60	0.025		$0.00	0	
48	concrete	3000 psi	1'x1'x1'	CU.FT.	$5.60			$0.00	0	
49	conc. placem't		1'x1'x1'	CU.FT	$3.70	0.05		$0.00	0	
50	rebar		#6	CU.FT	$0.27	0.012		$0.00	0	
51	col'm pad		5x5x5		$10.13	2.33		$0.00	0	
52	col'm		1.5x5		$74.40	2.2		$0.00	0	
53	baseplates		2"x2"		$0.88	0.05		$0.00	0	
54	flr conc.		2.5"	SF	$1.20	0.02	14,403	$17,283.60	288.06	
55	flr mesh		6"x6"6/6	SF	$0.15	0.02	14,403	$2,160.45	288.06	
56	concrete refinishing		1/8" thoro	SF	$0.64	0.025		$0.00	0	
57	MASONRY(4)									$6,987.60
58	masonry		4" brick	SF	$1.98	0.28	2,237	$4,429.26	626.36	
59			4" block-sol	SF				$0.00	0	
60			4" block-75	SF				$0.00	0	
61			6" block-75	SF				$0.00	0	
62			8" block-75	SF				$0.00	0	
63			10" block-7	SF	$2.33	0.08	1,098	$2,558.34	87.84	
64			repointing	SF	$0.25	0.2		$0.00	0	
65			4" block	SF	$2.33	0.08		$0.00	0	
66	G.R.C.		1/4" flat sh	SF	$1.60	0.063		$0.00	0	
67			3/8"	SF	$2.36	0.063		$0.00	0	
68			1/2"	SF	$3.14	0.063		$0.00	0	
69			5/8"	SF	$3.93	0.063		$0.00	0	

	1	2	3	4	7	8	10	11	12	13
70	METALS(5)									$55,483.97
71	Joists		10" 16ga.	1linft	$1.81	0.06	8,899.5	$16,108.10	533.97	
72			8" 16ga.	1linft	$1.40	0.06	600	$840.00	36	
73			6" 16ga.	1linft	$1.32	0.06		$0.00	0	
74	studs		4" 16ga.	1linft	$0.88	0.06	6,912	$6,082.56	414.72	
75			3.6" 22ga	1linft	$0.30	0.04		$0.00	0	
76			2.5" 20ga	1linft	$0.25	0.04	3,528	$882.00	141.12	
77	track		4" 16ga	1linft	$0.89		3,456	$3,041.28	0	
78			3.6" 22ga	1linft	$0.32			$0.00	0	
79			2.5" 20ga	1linft	$0.28		1,764	$493.92	0	
80	Bridging		1.5"18ga	1linft	$0.72	0.03	486	$349.92	14.58	
81	straps		1.5"18ga	1linft	$0.52	0.03	729	$379.08	21.87	
82								$0.00	0	
83	soffit panel		26ga.galv	1sqft	$0.35			$0.00	0	
84	Q'deck		24 ga.	1sqft	$0.75			$0.00	0	
85	steel deck		1.5" corr. 2	1sqft	$1.37		14,403	$19,732.11	0	
86								$0.00	0	
87	furring ch		1.5"	LIN FT	$0.40	0.05	8,899.5	$3,559.80	444.975	
88	Siding Panel		22ga.pt	SF	$1.25	0.063	171	$213.75	10.773	
89			accessrs		$0.20		171	$34.20	0	
90	flashing		22ga.pt	LIN FT	$1.25	0.01	505	$631.25	5.05	
91	stair (str&pan)		44" treads		$49.00	1.11	64	$3,136.00	71.04	
92	WOOD & PLASTICS(6)									$3,882.45
93								$0.00	0	
94								$0.00	0	

	1	2	3	4	7	8	10	11	12	13
95	THERMAL & MOISTURE PROTECTION(7)									$50,624.48
96	fibreglass insulation		2" accoust.	SF	$0.10	0.006	8,607	$860.70	51,642	
97			4"	SF	$0.21	0.006	6,945	$1,458.45	41.67	
98			6"	SF	$0.31	0.006		$0.00	0	
99			8"	SF		0.006	7,706	$0.00	46,236	
100			10"	SF	$0.55	0.006		$0.00	0	
101	rigid		1.5" poly.		$0.30	0.006	5,211	$1,563.30	31,266	
102			2"		$0.40	0.006		$0.00	0	
103			3" rigid	SF	$0.50	0.025		$0.00	0	
104	building paper		215#	SF	$0.05	0.006		$0.00	0	
105	vapour barrier		6 mil	SF	$0.04	0.006	10,924	$436.96	65,544	
106	waterproofing		(garage slab	SF	$1.31	0.08		$0.00	0	
107	prot. b'd			SF	$0.32	0.08	5,713	$1,828.16	457.04	
108	roofing		3ply	SF	$0.86	0.08	5,713	$4,913.18	457.04	
109	stucco			SF	$1.50	0.05	5,211	$7,816.50	260.55	
110	DOORS & WINDOWS(8)									$91,723.20
111	doors	hdwr+frm	solid wd	EA	$391.66	1.5	20	$7,833.20	30	
112			closer	EA	$125.00	0.3	9	$1,125.00	2.7	
113			metal	EA	$661.00	3	10	$6,610.00	30	
114			hollow wd	EA	$210.00	1.5	64	$13,440.00	96	
115			solid wd< fr	EA	$235.00	1		$0.00	0	
116			fold wdx4	EA	$100.00	1.5	39	$3,900.00	58.5	
117	windows	sup.& ins	alum.2x2	EA	$93.96			$0.00	0	
118			alum.2.5/2	EA	$146.81			$0.00	0	
119			alum.5/4.5	EA	$528.53			$0.00	0	
120			alum.5.5/5	EA	$710.57			$0.00	0	
121			wd. 3x8	EA	$237.00			$0.00	0	
122			alum	SF	$24.00		2,247	$53,928.00	0	
123			garage dr		$2,400.00			$0.00	0	

	1	2	3	4	7	9	10	11	12	13
124	FINISHES(9)									$148,231.14
125	drywall		1/2"	SF	$0.26	0.06	27,146	$7,057.96	1,628.76	
126			2x1/2"	SF	$0.52	0.12		$0.00	0	
127			5/8"	SF	$0.30	0.06	17,799	$5,339.70	1,067.94	
128			acces'rs				44,945	$0.00	0	
129	drywall repair		1/2"	SF	$0.25	0.01		$0.00	0	
130	plaster repair		1/2"	SF	$0.50	0.03		$0.00	0	
131			acces'rs	SF	$0.10	0.03		$0.00	0	
132	paint		2 coats	SF	$0.16	0.02	38,738	$6,198.08	774.76	
133	carpet		28 oz	SF	$1.66	0.023	1,258	$2,089.28	28.934	
134	vinyl flooring		seamless	SF	$1.50	0.1	1,117	$1,675.50	111.7	
135	ceiling tr&tile			SF	$0.75	0.05		$0.00	0	
136	wall tile			SF	$1.75	0.2	1,100	$1,925.00	220	
137	floor tile		masonry	SF	$2.50	0.1		$0.00	0	
138	kit. seamless			SF	$4.50	0.1		$0.00	0	
139	wd flooring		parquet	SF	$1.85	0.15	7,220	$13,357.00	1,083	
140	fl refinish	20% unit	varthane	SF	$0.16	0.015		$0.00	0	
141	floor repair			SF	$2.50	0.1		$0.00	0	
142								$0.00	0	
143	SPECIALTIES(10)									$2,404.50
144	toilet and bath accessories		towel holder		$40.00		14	$560.00	0	
145			toilet tissue holder		$16.00		14	$224.00	0	
146			med cab		$32.00		14	$448.00	0	
147			waste		$83.00			$0.00	0	
148	wood lockers				$50.00	1.5	14	$700.00	21	
149	EQUIPMENT(11)									$24,255.00
150	garbage compactor		5.5'dia	EA	$8,052.00	0		$0.00	0	
151	kitchen cabinets		top&bot	LIN FT	$90.00	1.5	196	$17,640.00	294	
152	vanities		lower	LIN FT	$60.00	0.85		$0.00	0	
153	washers		30"resid.					$0.00	0	
154	kitchettes		mf(5ft)	EA	$1,170.00	6		$0.00	0	
155	CONVEYING SYSTEMS(14)									$58,000.00
156			geared	EA	$85,000.00		0.6	$51,000.00	0	
157			hydraulic	EA	$78,300.00			$0.00	0	
158			car	EA	$1,300.00			$0.00	0	
159			doors/entra	EA	$3,500.00		2	$7,000.00	0	
160								$0.00	0	

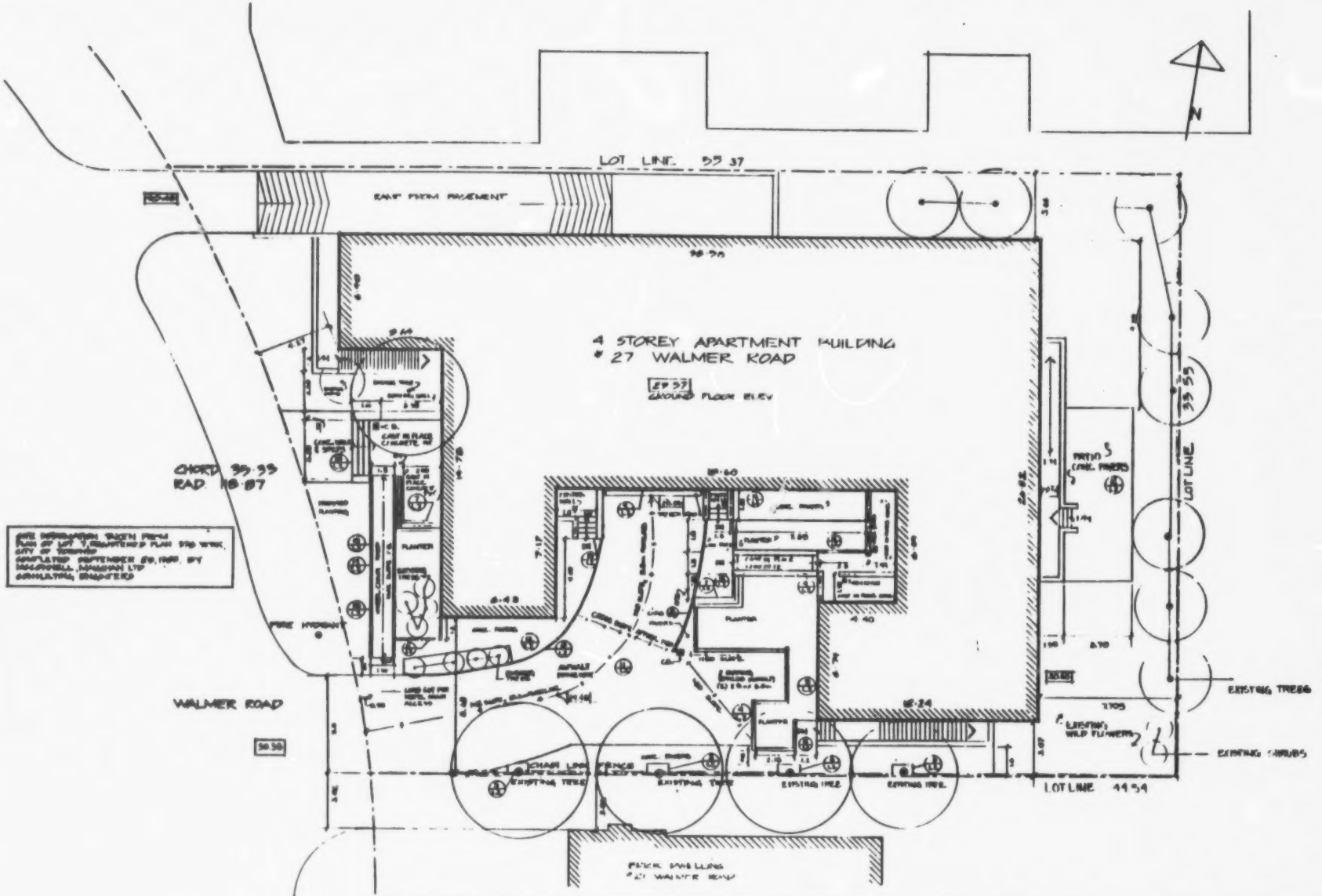
	14	15	16	17	18	19	20	21	22
32	quantity	materials $	labour (hrs)	Division Totals					
33									
34		$0.00	0	$3,002.35					
35		$0.00	0						
36	1.937	$387.40	116.22						
37		$0.00	0						
38		$0.00	0						
39		$0.00	0						
40		$0.00	0						
41		$0.00	0						
42		$0.00	0						
43		$0.00	0						
44				$1,202.50					
45		$0.00	0						
46		$0.00	0						
47		$0.00	0						
48		$0.00	0						
49		$0.00	0						
50		$0.00	0						
51		$0.00	0						
52		$0.00	0						
53		$0.00	0						
54		$0.00	0						
55		$0.00	0						
56	1.000	$640.00	25						
57				$2,445.29					
58		$0.00	0						
59		$0.00	0						
60		$0.00	0						
61		$0.00	0						
62		$0.00	0						
63	513	$1,195.29	41.04						
64	5.000	$1,250.00	1.000						
65		$0.00	0						
66		$0.00	0						
67		$0.00	0						
68		$0.00	0						
69		$0.00	0						

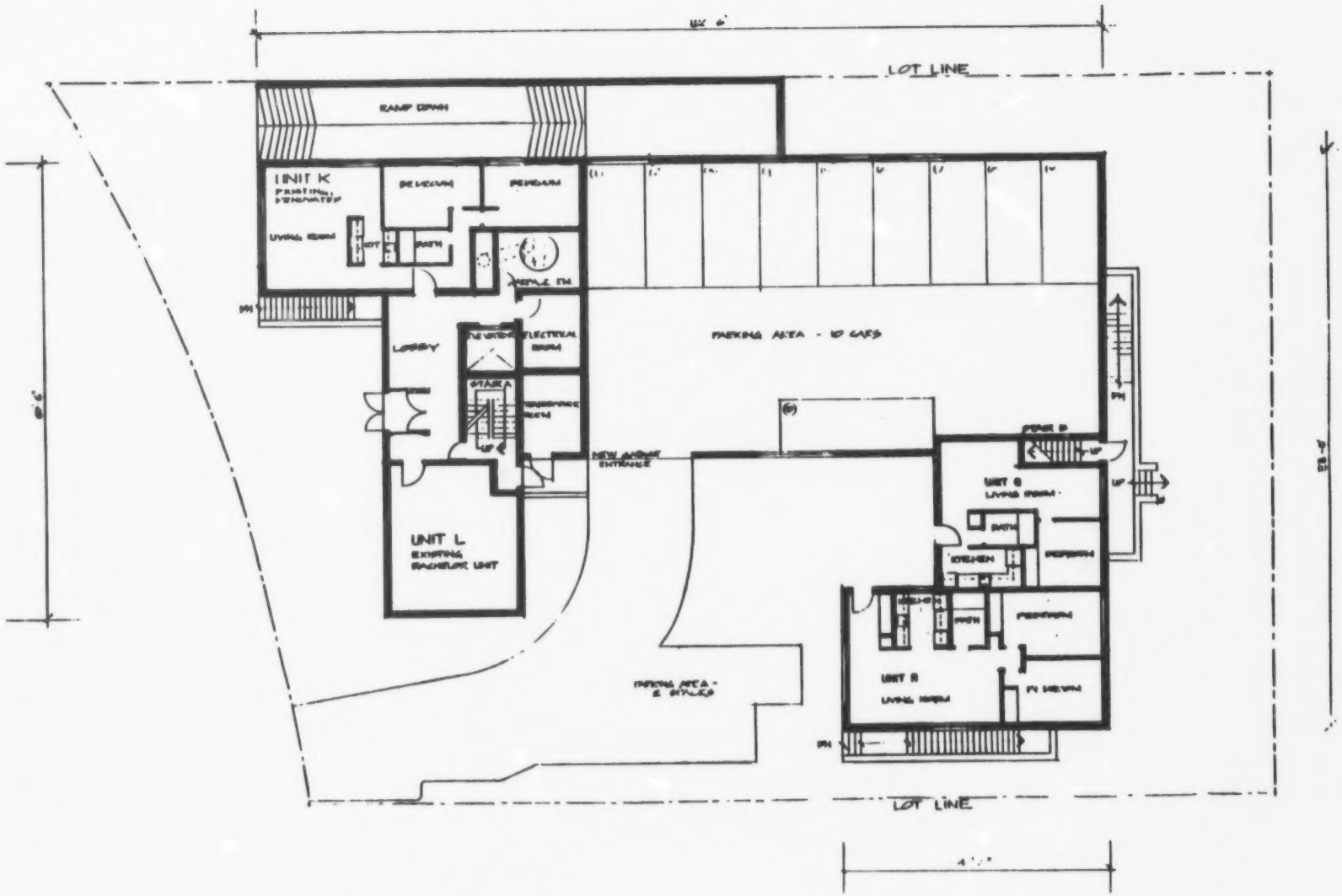
	14	15	16	17	18	19	20	21	22
70				$111.60					
71		$0.00	0						
72		$0.00	0						
73		$0.00	0						
74		$0.00	0						
75	216	$64.80	8.64						
76	120	$30.00	4.8						
77		$0.00	0						
78		$0.00	0						
79	60	$16.80	0						
80		$0.00	0						
81		$0.00	0						
82		$0.00	0						
83		$0.00	0						
84		$0.00	0						
85		$0.00	0						
86		$0.00	0						
87		$0.00	0						
88		$0.00	0						
89		$0.00	0						
90		$0.00	0						
91		$0.00	0						
92				$0.00					
93		$0.00	0						
94		$0.00	0						

	14	15	16	17	18	19	20	21	22
95				$994.59					
96		$0.00	0						
97	1,100	$231.00	6.6						
98		$0.00	0						
99		$0.00	0						
100		$0.00	0						
101	1,414	$424.20	8,484						
102		$0.00	0						
103		$0.00	0						
104		$0.00	0						
105		$0.00	0						
106		$0.00	0						
107		$0.00	0						
108		$0.00	0						
109		$0.00	0						
110				$132,186.56					
111	2	$783.32	3						
112		$0.00	0						
113	13	$8,593.00	39						
114	10	$2,100.00	15						
115		$0.00	0						
116	6	$600.00	9						
117		$0.00	0						
118	9	$1,321.31	0						
119	71	$37,525.28	0						
120	71	$50,450.65	0						
121		$0.00	0						
122	1,022	$24,528.00	0						
123	2	$4,800.00	0						

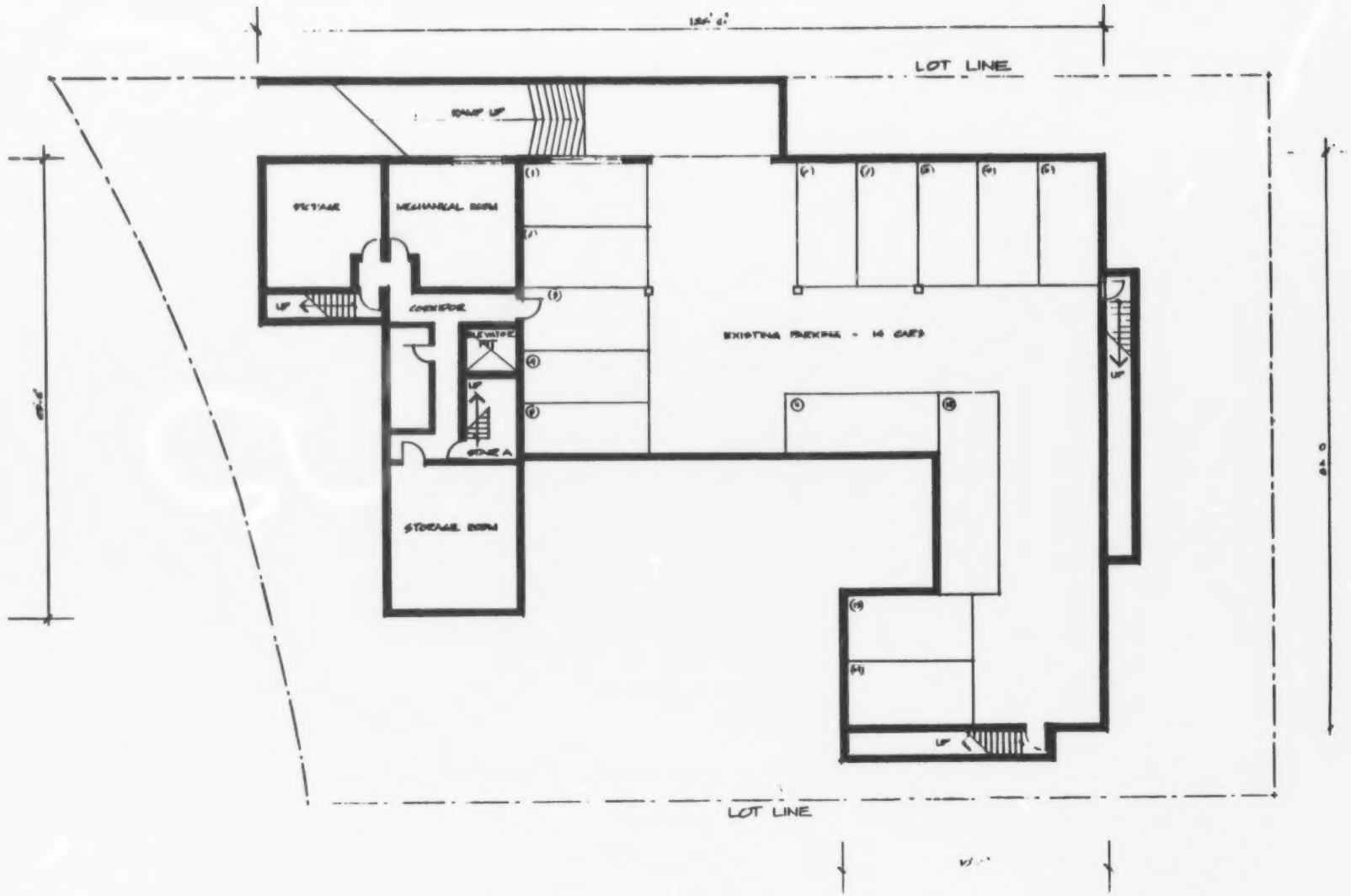
	14	15	16	17	18	19	20	21	22
124				$55,346.97					
125	5,380	$1,398.80	322.8						
126		$0.00	0						
127		$0.00	0						
128		$0.00	0						
29		$0.00	0						
130	64	$32.00	1.92						
131		$0.00	0						
132	55,525.6	$8,884.10	1,110.512						
133	1,920	$3,187.20	44.16						
134		$0.00	0						
135		$0.00	0						
136		$0.00	0						
137		$0.00	0						
138		$0.00	0						
139	1,638	$3,030.30	245.7						
140		$0.00	0						
141		$0.00	0						
142		$0.00	0						
143				$352.00					
144	4	$160.00	0						
145	4	$64.00	0						
146	4	$128.00	0						
147		$0.00	0						
148		$0.00	0						
149				$13,373.25					
50	1	$8,052.00	0						
51	43	$3,870.00	64.5						
52		$0.00	0						
53		$0.00	0						
54		$0.00	0						
155				$0.00					
156		$0.00	0						
157		$0.00	0						
158		$0.00	0						
159		$0.00	0						
160		$0.00	0						

	14	15	16	17	18	19	20	21	22
161				$77,504.00					
162		$77,504.00	0						
163		$0.00	0						
164		$0.00	0						
165		$0.00	0						
166		$0.00	0						
167		$0.00	0						
168		$0.00	0						
169		$0.00	0						
170				$93,376.00					
171		$93,376.00	0						
172		$0.00	0						
173		$0.00	0						
174		$0.00	0						
175		$0.00	0						
176		$0.00	0						
177		$0.00	0						
178									
179	77,149.6		3,066,376						
180			$22.50	rate					
181		$334,627.44	68,993.46						
182		$403,620.90							
183			32	#units					
184			$12,613.15	Per Unit Cost					
185									
186									
187									
188									

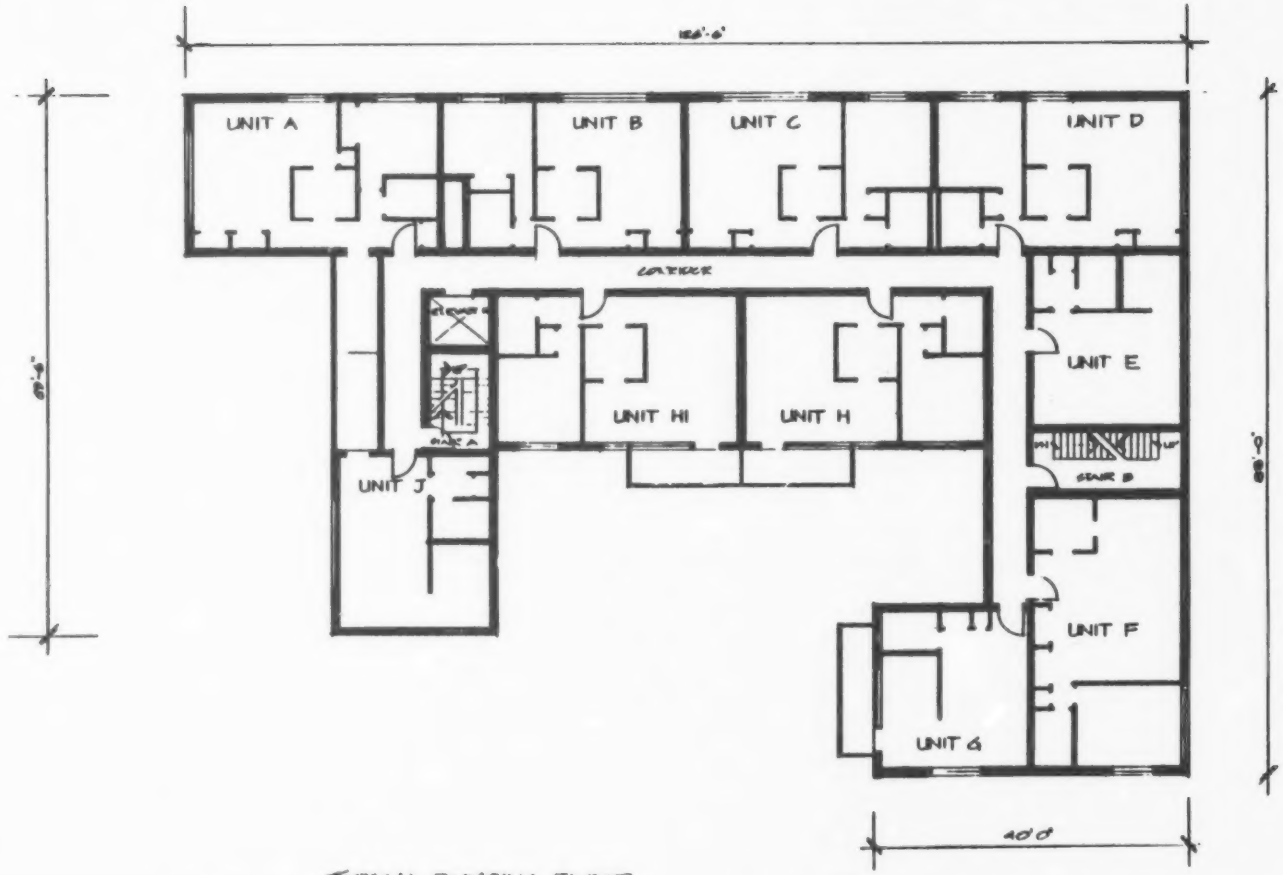

LOT LINE 33.37
EAST FROM PAVEMENT
98.26
4 STOREY APARTMENT BUILDING
#27 WALMER ROAD
EP 97
GROUND FLOOR ELEV
CHORD 39.39
RAD 18.87
WALMER ROAD
FIRE HYDRANT
LOT LINE
33.55
LOT LINE 44.54
EXISTING TREES
EXISTING SHRUBS
EXISTING WILD FLOWERS
EXISTING TREE
EXISTING TREE
EXISTING TREE
EXISTING TREE
PATIO 3
(INCL. PAVED)
PATIO 4
(INCL. PAVED)
PLANTER
PLANTER
PLANTER



GROUND FLOOR PLAN

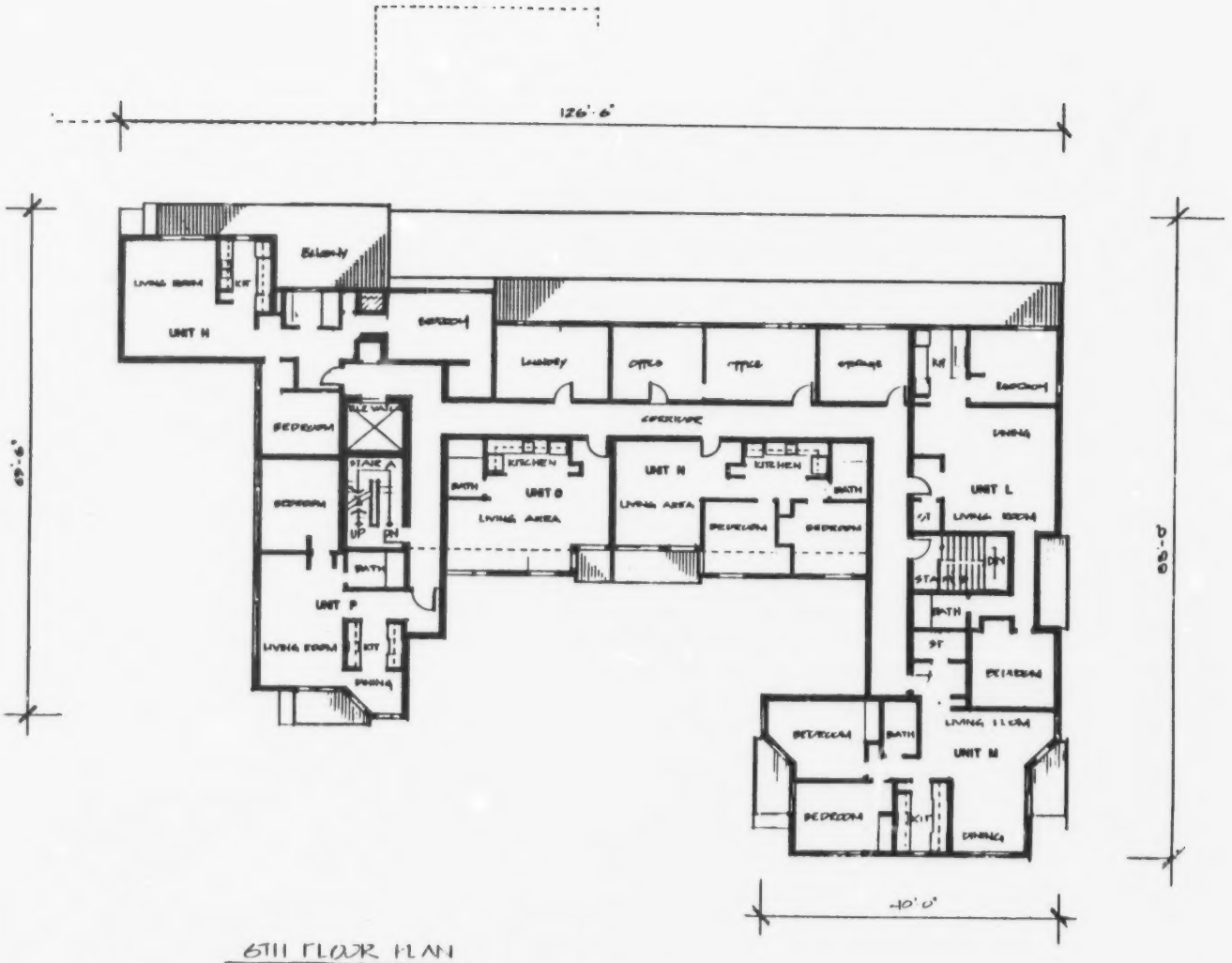


BASEMENT FLOOR PLAN

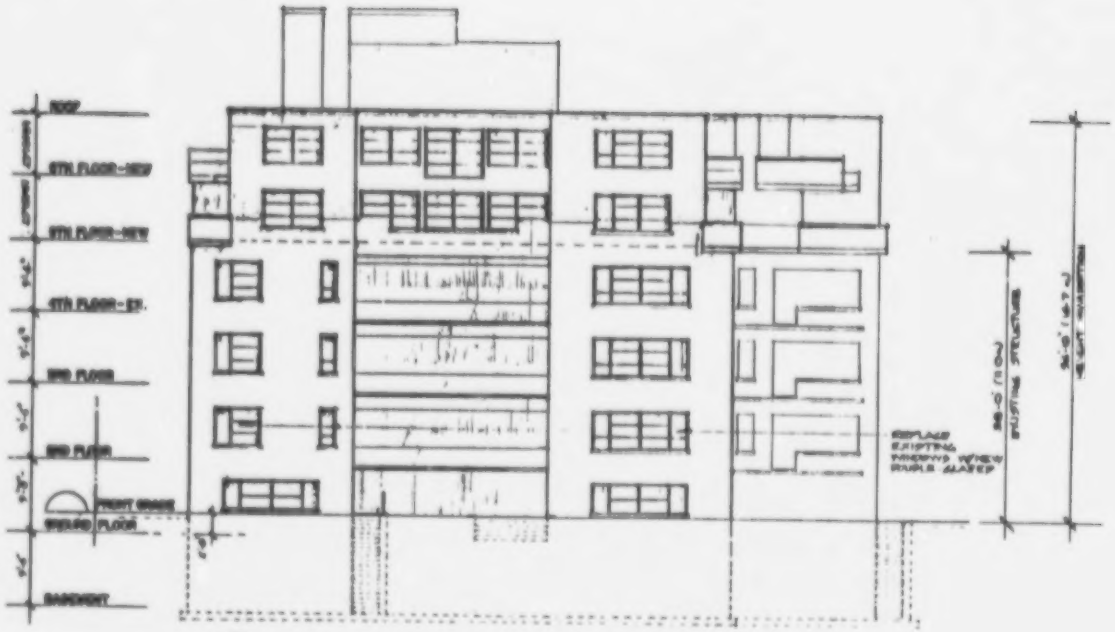


TYPICAL EXISTING FLOOR

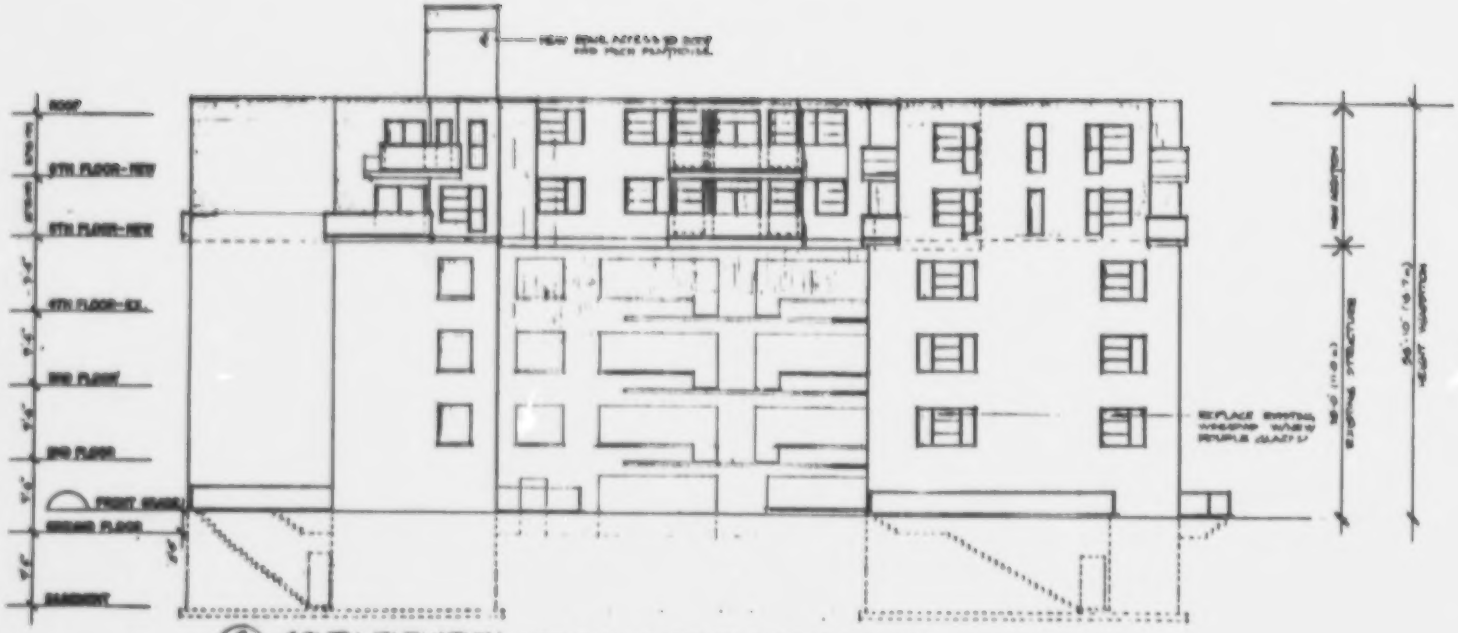
5TH FLOOR PLAN



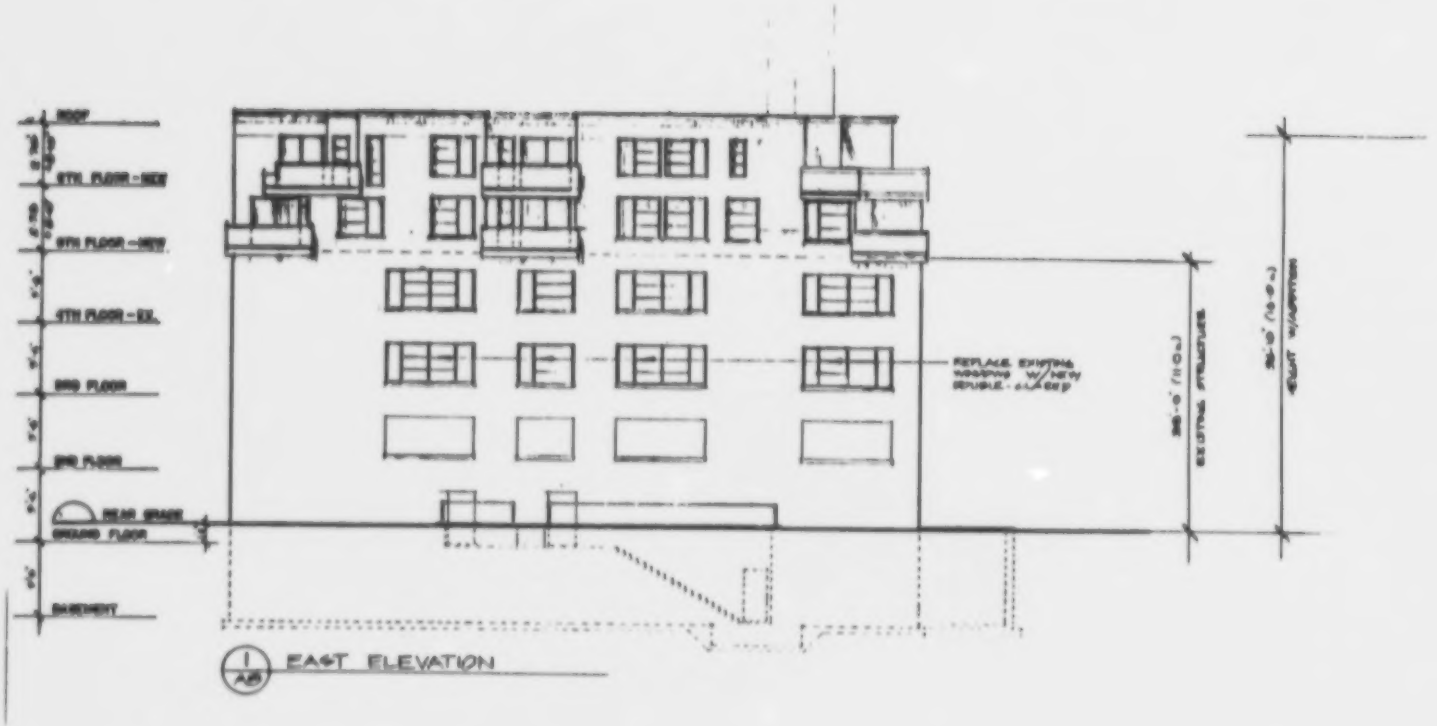
6TH FLOOR PLAN

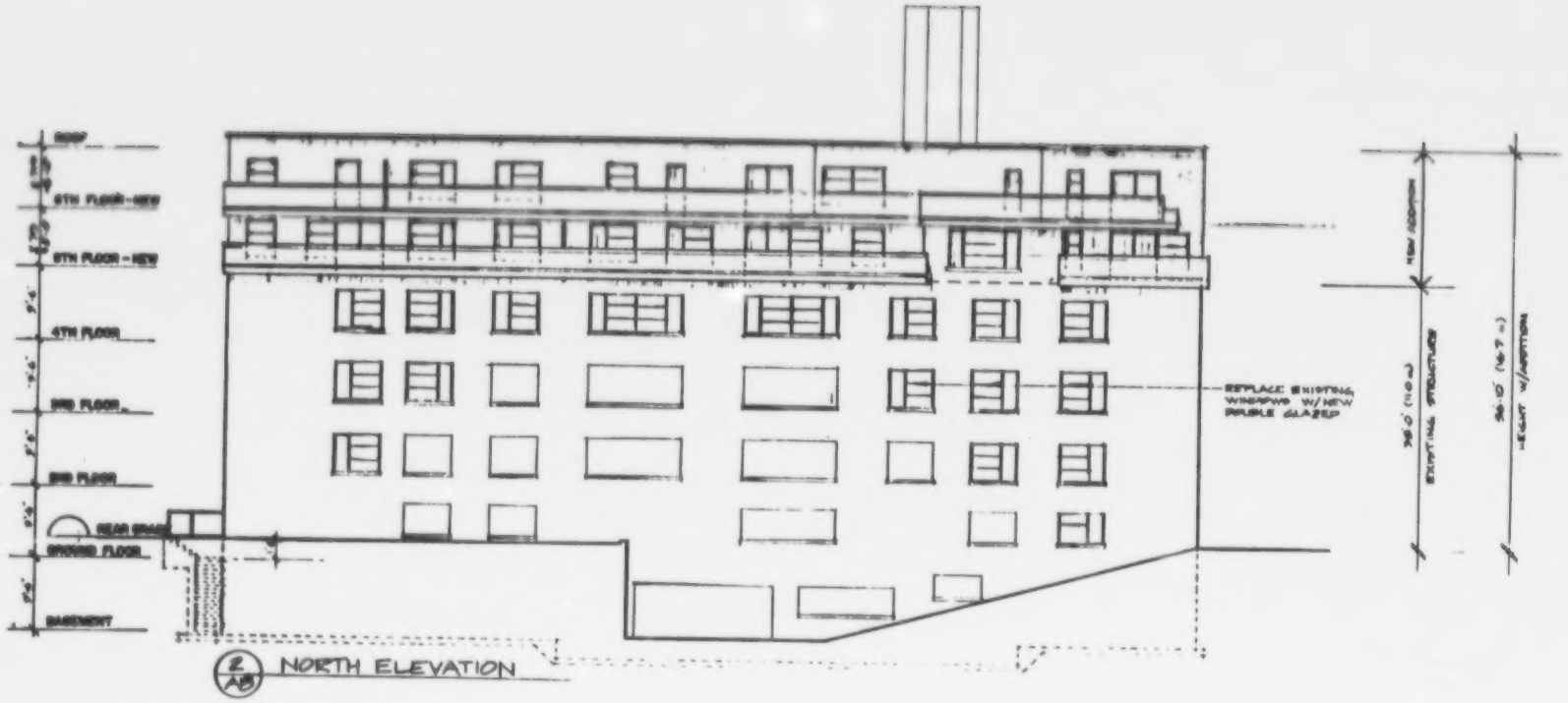


1/A7 WEST ELEVATION
(FRONT FAÇADE)

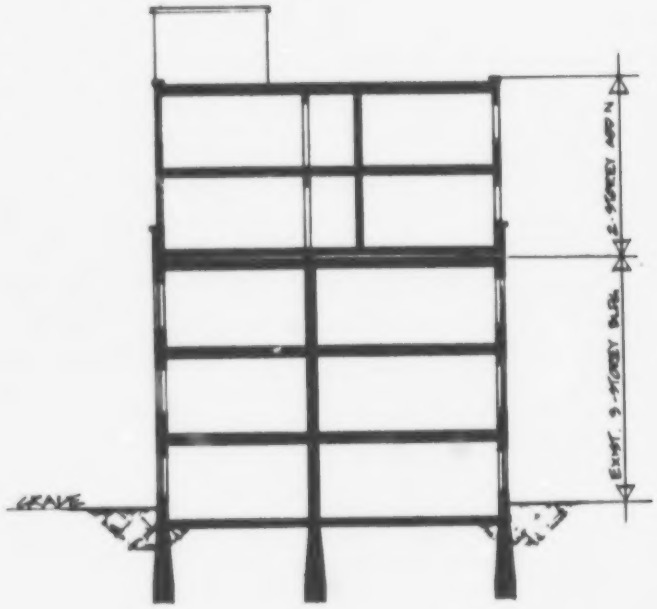


(2/A7) SOUTH ELEVATION (SEE DWG A7 FOR COURTYARD ELEVATIONS)


ROOF
4TH. FLOOR - NEW
4TH. FLOOR - NEW
4TH. FLOOR - EX.
3RD. FLOOR
2ND. FLOOR
REAR GRADE
GROUND FLOOR
BASEMENT
REPLACE EXISTING WINDOWS W/ NEW DOUBLE - GLAZED
EXISTING STRUCTURE
EAST ELEVATION

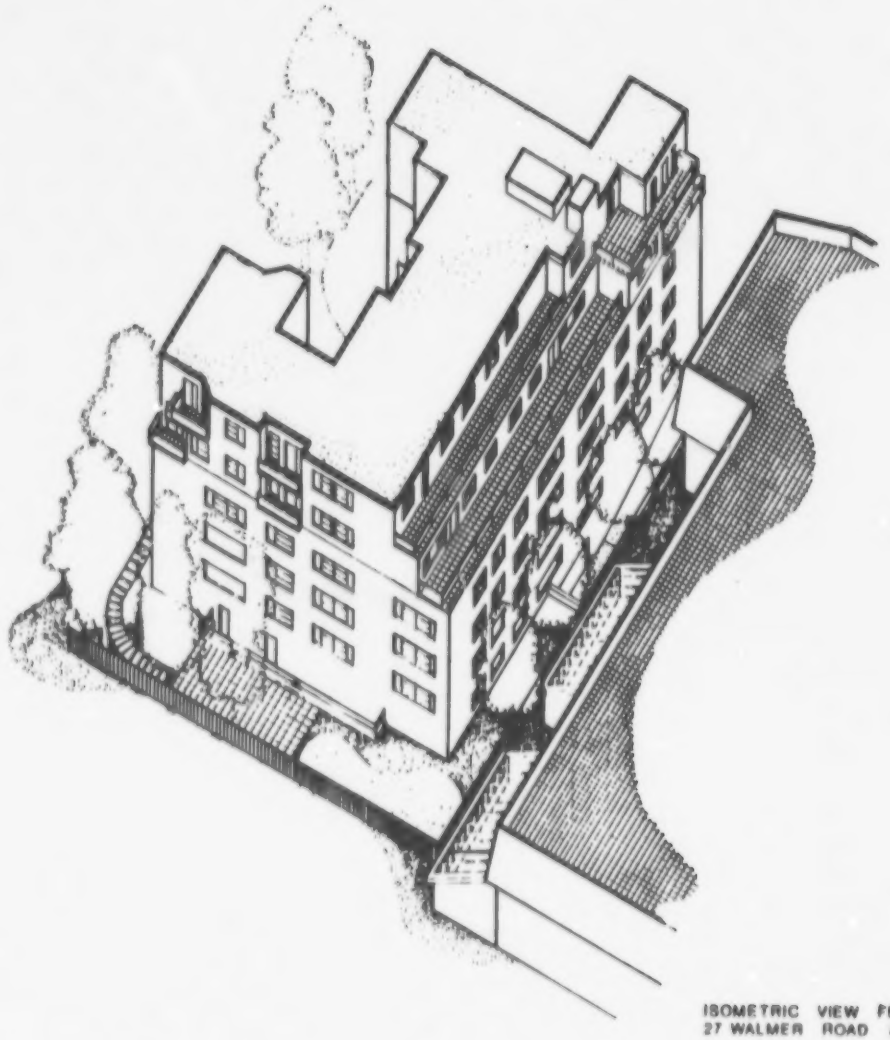


2/A8 NORTH ELEVATION



SECTION - B745

PERSPECTIVE VIEW OF 27 WALMER ROAD



ISOMETRIC VIEW FROM NORTHEAST OF
27 WALMER ROAD & 31 WALMER ROAD

Stage II

Part E: 745 Bloor Street West, Toronto

I. Introduction, and Intent
II. Proposal, General Description
III. Site Statistics and Present Zoning
IV. Building Statistics and Description
V. Proposal
VI. Proposal- Revised Statistics, Site and zoning
VII. Proposal- Building-scope of work.
VIII. Proposal- Building-costing

I. Introduction, and Intent

The building at 745 Bloor Street West was included in this study as an example of a building built before 1945 which contains many characteristics for this category of structure. The existing building is on a small lot, built to a high gross floor density and unit per acre density. In regard to the planning issues it would be typical to a segment of low-rise apartment buildings of this era in the City of Toronto.

The physical characteristics are also typical of this segment in the City. The existing building is built with load bearing masonry walls and a traditional wood joist floor system. The building contains wood demising partitions and would be classified in the Codes as a "combustible construction". This characteristic would not make this building eligible for funding under such programs as C.M.H.C's social housing program if the requirement was for conformance to the National Building Code for additions beyond a total building height of four stories. This should provide an example of an addition and renovation using Part Eleven of the Ontario Building Code.

The other characteristic that this building displays is its modest size. The building presently contains nine units. This building should provide information regarding the financial impact of additions to such buildings.

II. Proposal, General Description

The proposal for the intensification of this building is to add six additional units to the building. Due to the nature of the site in its proximity to shopping, the amenities of the neighboring parks, and the transp[ortation system, it is suitable for senior citizen occupancy using the cliche of seniors housing, "at a transit station, adjacent to shopping and

across from a park." The designation of this use is also a means of solving some of the planning problems inherited in this small site. It may provide a means of reducing the parking that would be required for a conventional site.

The additional units will mirror the present floor plans of the existing apartment units in order to simplify possible problems in providing Fire Exits from the new floors. These units will be two bedroom units and vary from the standard bachelor or one bedroom senior's unit [250m2] funded by the public sector. As such these units would resemble the standard size provided in the private sector. The average unit would be 90 m2.

Treated for the purposes of this exercise as a 'seniors building' for planning purposes the building will require an additional four parking spaces to be provided for the building. As per the policy of the City of Toronto, these spaces may be leased, subject to approval by council, within 50 m of the site.

III. Site Statistics and Present Zoning

The site occupied by the building is on Bloor Street in the City of Toronto near the intersection of Bloor Street and Christie Street. It is served by a subway station at this intersection of the Bloor Street line. The site is adjacent to a 20 hectare park system containining: recreational facilities, a community centre and a highschool. This section of Bloor Street contains low density commercial uses including shops, restaurants, professional and service industry offices. The surrounding residential neighbourhoods contain a mixture of single family homes, duplexes and subdivided homes. The average density of these neighbourhoods would be to an approximate density of 0.8.

The Building is currently zoned as 'C1 V1' by the City of Toronto. This category allows mixed use lowrise structures containing a variety of permitted uses including retail stores and shops, business offices, service shops, and residential uses. the restrictions with the current zoning are numerous and complicated by the "mixed use" considerations of residential and commercial uses in the same structure. In general a building that is totally used for residential purposes is restricted to low density regulations. Whereas a mixed use building's density may be up to three times the lot area, a residential building is restricted to one times the density. The existing building currently exceeds the permitted density.

Site area-	464.5 m2 [5000 s.f..]
Building coverage-	294.1 m2 [3166 s.f..]
Landscaped area-	153.2 m2 [1649.4 s.f..] or 33%
Gross floor area-	847.2 m2 [9120 s.f..] or 1.82 x lot area.

Unit Count-

Bachelor-	1
One Bedroom-	1
Two Bedroom-	7
Total Required	10
Parking provided-	1 space

IV. Building Statistics and Description

The current building contains nine units. The gross floor are of the existing structure is 884 m2. The existing unit area to common area ratio is typical for a small building of this era. The present configuration of the building is as a three story structure with the lower floor occupied with two units and a furnace room containing the mechanical services for the building.

Built in 1915 as a three story walk up apartment building, the present building exhibits some of the characteristics of this age of construction. The building is built with 30 cm load wood stud walls. These walls are configured as the exterior and a center load bearing wall. The floor and roof system is a wood joist system of 30 cm joists spanning an average of 3.5 m. Interior partitions are either of wood stud assemblies or in some cases of masonry construction.

The foundations are comprised of load bearing masonry walls with footings of undetermined size. These areas were not exposed and this information is based on visual observations. See Engineer's comments.

The mechanical systems contained in the present building are representative of their age. The heating system is a low pressure hot water system with cast iron radiators. The risers for both the heating and domestic hot water system appear to be cast iron or steel pipes common in the early 1900's. The electrical system distributes 30 amp service to each unit. The visual inspection of this system would indicate that there has been little up grading to this system and would merit replacement.

As a three story walk up apartment building, the current structure does not contain an elevator.

The general condition of the exterior envelope is that of a building of this era. The exterior masonry will require some repairs to the masonry joints and possibly some replacement of masonry units near the parapets of the building. The interior finishes are in repairable condition. The interior walls are plastered and will require some care taken in the installation of new mechanical systems in order to avoid total replacement. The windows are single glazed wood windows and will require replacement.

V. Proposal

The proposal is to construct six additional units on the top of the existing structure. These will be two bedroom units and will have a similar floor plan as the existing units on the second and third floor of the building.

The layout or configuration of the proposed units is constricted by the existing configuration of the building. The entrance and the circulation system is contained in the center of the building.

VI. Proposal- Revised Statistics, Site and zoning

The revised site statistics for the project including the addition would be;

Site area-		464.5 m2 [5000 s.f..]
Building coverage-		294.1 m2 [3166 s.f..]
Landscaped area-		153.2 m2 [1649.4 s.f..] or 33%
Total gross floor area-		1435.2 m2 [15,449.3 s.f..] or 3.09 x lot area.
GFA of additions-		588.2 m2 [6332 s.f..]
Unit Count		
	Bachelor-	1
	One Bedroom-	1
	Two Bedroom-	13
Total		15
Parking required		5 spaces [seniors housing]

For the additions to the Existing Building the following would be a list of variances to the existing Zoning;

i] Density- The new gross floor area of the building additions will be 588.2 m2 [6332 s.f..] , resulting in a total GFA of 1435.2 m2 [15,449.3 s.f.] at a density of 3.09 x lot area.

ii] The height of the building will be five stories or approximately 13.7 meters, exceeding the allowable height of three stories.

iii] The front yard set backs requirement of 6m. will be reduced to 3m. The side yard and rear yard set back requirement of 7.5m will be reduced to 2.5m.

iv] The additions will be constructed in violation of the 60

degree angular plane requirements for all set backs.

v) Driveway Width- This has been deleted as the current proposal meets the Bylaw due to the non conforming nature of the existing building.

vi) Circular Driveway- This has been deleted since the current proposal meets the Bylaw due to the non conforming nature of the existing building.

vii) Loading Dock- This has been deleted as the current proposal meets the Bylaw due to the non conforming nature of the existing building.

vi) Landscaped Area- The requirement is for 50% and the current building provides 33%.

viii) Parking Count- The requirement is for 16 spaces, and under the non assisted housing category. As "assisted housing," the requirement would be for 8 spaces. As "senior housing," the requirement would be for 5 spaces. In either case relief would be required from the standard housing requirement through application to council.

ix) Building Length- As per the existing, however the addition will extend beyond the 17.0 metre limit from the minimum front yard set back.

x) Units per acre-

As the list of variances to the existing zoning exceed in magnitude and in number that which might be examined by the Committee of Adjustment, this site would require a "Re-zoning."

The designation in the Official Plan for this area is as a low density residential area. This proposal for the "intensification of the site will exceed that allowed in the official plan. In this regard the Official Plan would have to be amended.

In addition, a development agreement to be obtained for this development will also be required.

The time frame for the, re-zoning, Official Plan Amendment, and the Development Agreement, would require a minimum of two years to complete.

VII. Mechanical

- Check efficiency of existing gas fired heating boiler RUUD - CB 480C.
- Change and update outdoor-indoor thermostatic control for the boiler.
- If desired, install individual non-electric thermostats in each suite.
- Domestic hot water distribution is copper piping and appears to be from Boiler Room individual hot and cold water pipe to each suite.
- Domestic hot water storage heater is rental, gas fired RUUD -CL 100, 85 U.S. gallon and provides sufficient capacity. Additional apartments will have to be fed from the seperate source (heater, piping distribution).
- Ventilation - new individual bathroom and kitchen exhaust system would have to be installed throughout. Present natural ventilation is not sufficient.
- Gas distribution to stoves in each apartment should be eliminated.

VIII. Electrical

- Electrical installations throughout are outdated and insufficient. They must be replaced completely.
- Fire alarm and detection system must be updated . Detectors to be installed in each suite.
- New apartments on additional two floors should be heated electrically since extension of existing heating system is not practical.

Note: Increase electrical budget by $10,000. for old building and by $5,000. for new. (This is the estimate of the Mech. and Elect. Engineer).

IX. Structural

The building is a load bearing structure with wood joists bearing on the exterior walls and the interior corridor walls. The exterior walls appear to be sound and free of settlement or structural cracks and are approximately 12" thick consisting of 4" brick and 8" block backup.

It is proposed to add an additional 2 floors of light weight metal framing construction set on the existing load bearing walls.

The existing masonry walls could be engineered to carry this additional load using up to date present day codes.

The stud walls 2x6 @ 16 o/c spruce No.1 would require stiffening on the lower two floors by the doubling up of every second stud.

Foundations were probably designed for 2 to 3 tons psf. Soil tests require to be taken to justify a (plus or minus) 25% increase in the soil conditions to avoid underpinning existing footings. This should be the first step taken to check if the existing footings are adequate for the increased load.

X. Proposal- Building-scope of work.

Division 1 - General Requirements
Bidders should include for: Indirect Costs
Professional Fees
Service Connections
O.H.&P.
Contingency
Insurance (for performance bond and general comprehensive insurance)

Division 2 - Site Work
Includes new paving and walkways with some plantings at the main entrance. Some excavation is required for the surface parking at the rear. The unit at grade will be demolished.

Division 3 - Concrete
New 5" reinforced concrete slab on grade is required for the 5 car parking at the rear. New 2 1/2 " (38 mm) concrete floors are required for the additions. New floor is required in the mechanical room.

Division 4 - Masonry
Repointing of the existing brick is required in particular at the roof level and the east elevation.

Division 5 - Metals
All new construction for additions are to be light gauge metal framing set on the existing loadbearing walls.

Division 6- Wood and Plastics
New plastic laminate countertops are required in the existing kitchens and the laundry area. New wood lockers with wire mesh are to be provided for each new unit. Existing kitchen cabinets are to be refinished with sand and stain and/or replaced. Repairs are required to the existing wood balconies.

Division 7 - Thermal and Moisture Protection

Full batt insulation is to be provided in all exterior walls as well as 1 1/2" (38 mm) rigid insulation under the stucco finish. Between suites and between public areas and suites 2" (50 mm) of accoustical insulation is provided. The roofing is to be standard ply built up roof with prepainted metal flashing.

Division 8 - Doors and Windows
Doors to existing suites are acceptable and comply with 20 minute fire requirements but new closures are required. All windows to be replaced with thermally broken frames and sealed units.

Division 9 - Finishes
Minor alterations are required to the existing units to comply with minimum unit sizes. As well finishes will be disturbed in the bath and kitchen areas during riser replacement and window installation. Patching to these areas will be required. New partitions are to be 1/2" (12mm) drywall on metal studs. A percentage of the units will require new vinyl flooring in the kitchen and refinishing of parquet wood floors with sanding, sealer and varathane. Wall tiles are to be replaced in bath areas diaturbed during riser replacement. New carpet is required in corridors and lobbies throughout. Suspended ceiling are required in existing laundry rooms.

Division 10 - Specialties
New bath accessories are required for the new apartment units.

Division 11 - Equipment
A new garbage compactor will be installed next to the elevator in the basement.

Division 12 - Furnishings
New kitchen cabinets will be installed in all new suites.

Division 13 - Special Construction

Division 14 - Conveying Systems
The elevator service must be extended to accommodate the new floors.

Division 15 - Mechanical
All galvanized hot water risers and branches will be replaced throughout the building. A percentage of valves on existing rads will require replacement as well. The existing furnace will be replaced. Lines will be extended to service the new units. Kitchen and bath areas require new exhaust equipment and exit stairs and corridors require pressurization for smoke control. New firehose cabinets will be provided and sprinklers will be installed in new locker rooms and parking garages.

Division 16 - Electrical
The existing fire alarm system and intercom system will be updated. Each unit will have new smoke and heat detectors. Emergency lighting units will be provided in the exit stairs and corridors. Ground fault receptacles will be installed in all kitchens and bath areas.

VIII. Proposal- Building-costing

	Existing	New
General Requirements(1)	$17,800.	$41,300.
SiteWork(2)	$4,200.	$0.
Concrete(3)	$14,300.	$14,200.
Masonry(4)	$9,500.	$0.
Metals(5)	$800.	$40,400.
Wood & Plastics(6)	$2,100.	$0.
Thermal & Moisture Protect'n(7)	$600.	$29,300.
Doors & Windows(8)	$57,200.	$40,100.
Finishes(9)	$22,900.	$65,300.
Specialties(10)	$200.	$1,400.
Equipment(11)	$3,800.	$7,900.
Furnishings(12)	$0.	$0.
Special Construction(13)	$0.	$0.
Conveying Systems(14)	$0.	$97,100.
Mechanical(15)	$19,400.	$45,800.
Electrical(16)	$23,300.	$25,300.
Totals Div. 2 - 16	$158,200.	$366,800.
TOTAL	$525,000.	

	1	2	3	4	7	8	10	11	12	13
1									Existing	New
2							General Requirements(1)		$17,800.34	$41,259.66
3							SiteWork(2)		$4,226.85	$0.00
4							Concrete(3)		$14,254.50	$14,175.00
5							Masonry(4)		$9,500.00	$0.00
6							Metals(5)		$762.50	$40,370.32
7							Wood & Plastics(6)		$2,050.00	$0.00
8							Thermal & Moisture Protect'n(7)		$618.75	$29,343.60
9							Doors & Windows(8)		$57,203.33	$40,086.67
10							Finishes(9)		$22,877.08	$65,282.90
11							Specialties(10)		$176.00	$1,374.00
12							Equipment(11)		$3,836.25	$7,920.00
13							Furnishings(12)		$0.00	$0.00
14							Special Construction(13)		$0.00	$0.00
15							Conveying Systems(14)		$0.00	$97,100.00
16							Mechanical(15)		$15,376.00	$45,820.00
17							Electrical(16)		$23,344.00	$25,280.00
18							Totals Div. 2 - 16		$158,225.26	$366,752.49
19									TOTAL	$566,237.40
20	GENERAL REQUIREMENTS(1)								Cost/Unit	$35,389.84
21	Construction Value							$524,977.75		
22	indirect costs			6.00%				$31,498.66	$31,498.66	
23	prof. costs			12.00%				$62,997.33	$62,997.33	
24	service connections			0.75%				$3,937.33	$3,937.33	
25	permit costs (75% actual cost)			1.00%				$3,937.33	$3,937.33	
26	O.H.&P.			10.00%				$52,497.77		
27	contingency			3.00%				$15,749.33	$15,749.33	
28	insurance	100%	perf.bond	0.50%				$2,624.89	$2,624.89	
29										
30	TOTALS	not included in costs shown below						SubTotal	$120,744.88	
31								Per unit Cost	$7,546.56	

	1	2	3	4	7	8	10	11	12	13
32	NEW CONSTRUCTION									
33	ELEMENT	code	elem. des.	unit des.	unit price	labour	quanity	materials $	Labour (HRS)	Division Totals
34										
35	SITEWORK(2)									$0.00
36	demolition		int. part.	SF	$0.10	0.03		$0.00	0	
37			conc. walls	SF	$0.20	0.06		$0.00	0	
38	backfill			CUFT				$0.00	0	
39	grading			CUFT				$0.00	0	
40	sod			SF	$0.15	0		$0.00	0	
41	lookstone			SF				$0.00	0	
42	turfstone			SF				$0.00	0	
43	conc. pavers		2'x4'	SF				$0.00	0	
44	asphalt paving	sup & inst	1 layer 2"	SF	$0.42			$0.00	0	
45	CONCRETE(3)									$14,175.00
46	formwork			SF				$0.00	0	
47	bracing		2"x4"	SF	$0.40	0.025		$0.00	0	
48	plywood		3/4"	SF	$0.60	0.025		$0.00	0	
49	concrete	3000 psi	1'x1'x1'	CU.FT.	$5.60			$0.00	0	
50	conc. placem't		1'x1'x1'	CU.FT	$3.70	0.05		$0.00	0	
51	rebar		#6	CU.FT	$0.27	0.012		$0.00	0	
52	col'm pad		5x5x5		$10.13	2.33		$0.00	0	
53	col'm		1.5x5		$74.40	2.2		$0.00	0	
54	baseplates		2"x2"		$0.88	0.05		$0.00	0	
55	flr.conc.		2.5"	SF	$1.20	0.02	6,300	$7,560.00	126	
56	flr.mesh		6"x6"6/6	SF	$0.15	0.02	6,300	$945.00	126	
57	concrete refinishing		1/8" thoro	SF	$0.64	0.025		$0.00	0	
58	MASONRY(4)									$0.00
59	masonry		4" brick	SF	$1.98	0.28		$0.00	0	
60			4" block-sol	SF				$0.00	0	
61			4" block-75	SF				$0.00	0	
62			6" block-75	SF				$0.00	0	
63			8" block-75	SF				$0.00	0	
64			10" block-7	SF	$2.33	0.08		$0.00	0	
65			repointing	SF	$0.25	0.2		$0.00	0	
66			4" block	SF	$2.33	0.08		$0.00	0	
67	G.R.C.		1/4" flat sh	SF	$1.60	0.063		$0.00	0	
68			3/8"	SF	$2.36	0.063		$0.00	0	
69			1/2"	SF	$3.14	0.063		$0.00	0	
70			5/8"	SF	$3.93	0.063		$0.00	0	

	1	2	3	4	7	8	10	11	12	13
71	METALS(5)									$40,370.32
72	Joists		10" 16ga.	1 lin ft	$1.81	0.06	3,588	$6,494.28	215.28	
73			8" 16ga.	1 lin ft	$1.40	0.06	216	$302.40	12.96	
74			6" 16ga.	1 lin ft	$1.32	0.06		$0.00	0	
75	studs		4" 16ga.	1 lin ft	$0.88	0.06	976	$858.88	58.56	
76			3.6" 22ga	1 lin ft	$0.30	0.04		$0.00	0	
77			2.5" 20ga	1 lin ft	$0.25	0.04	1,376	$344.00	55.04	
78	track		4" 16ga.	1 lin ft	$0.88		244	$214.72	0	
79			3.6" 22ga	1 lin ft	$0.32			$0.00	0	
80			2.5" 20ga	1 lin ft	$0.28		688	$192.64	0	
81	Bridging		1.5" 18ga	1 lin ft	$0.72	0.03	200	$144.00	6	
82	straps		1.5" 18ga	1 lin ft	$0.52	0.03	760	$395.20	22.8	
83								$0.00	0	
84	soffit panel		26ga galv	1 sqft	$0.33			$0.00	0	
85	Q'deck		24 ga	1 sqft	$0.75			$0.00	0	
86	steel deck		1.5" corr 2	1 sqft	$1.37		9,480	$12,987.60	0	
87								$0.00	0	
88	furring ch		1.5"	LIN FT	$0.40	0.05	4,740	$1,896.00	237	
89	Siding Panel		22ga pt	SF	$1.25	0.063		$0.00	0	
90			acces'rs		$0.20			$0.00	0	
91	flashing		22ga pt	LIN FT	$1.25	0.01	340	$425.00	3.4	
92	stair (str&pan)		44" treads		$49.00	1.11	32	$1,568.00	35.52	
93	WOOD & PLASTICS(6)									$0.00
94			countertops	LF	$10.00	0.125		$0.00	0	
95								$0.00	0	
96	THERMAL & MOISTURE PROTECTION(7)									$29,343.60
97	fibreglass insulation		2" accoust.	SF	$0.10	0.006	1,880	$188.00	11.28	
98			4"	SF	$0.21	0.006	3,200	$672.00	19.2	
99			6"	SF	$0.31	0.006		$0.00	0	
100			8"	SF		0.006	3,160	$0.00	18.96	
101			10"	SF	$0.55	0.006		$0.00	0	
102	rigid		1.5" poly.		$0.30	0.006	3,800	$1,140.00	22.8	
103			2"		$0.40	0.006		$0.00	0	
104			3" rigid	SF	$0.50	0.025		$0.00	0	
105	building paper		215#	SF	$0.05	0.006		$0.00	0	
106	vapour barrier		6 mil	SF	$0.04	0.006	3,648	$145.92	21.888	
107	waterproofing		(garage slab	SF	$1.31	0.08		$0.00	0	
108	prot. b'd			SF	$0.32	0.08	3,160	$1,011.20	252.8	
109	roofing		3ply	SF	$0.86	0.08	3,160	$2,717.60	252.8	
110	stucco			SF	$1.50	0.05	3,800	$5,700.00	190	

	1	2	3	4	7	8	10	11	12	13
111	DOORS & WINDOWS(8)									$40,086.67
112	doors	hdwr+fr	solid wd	EA	$391.66	1.5	8	$3,133.28	12	
113			closer	EA	$125.00	0.3	8	$1,000.00	2.4	
114			metal	EA	$661.00	3	5	$3,305.00	15	
115			hollow wd	EA	$210.00	1.5	16	$3,360.00	24	
116			solid wd< fr	EA	$235.00	1		$0.00	0	
117			fold wdx4	EA	$100.00	1.5	50	$5,000.00	75	
118	windows	sup & ins	alum.2x2	EA	$93.96			$0.00	0	
119			alum.2.5/2	EA	$146.81		8	$1,174.50	0	
120			alum.5/e.5	EA	$528.53		6	$3,171.15	0	
121			alum.5.5/5	EA	$710.57		24	$17,053.74	0	
122			wd. 3x8	EA	$237.00			$0.00	0	
123			alum	SF	$24.00			$0.00	0	
124			garage dr		$2,400.00			$0.00	0	
125	FINISHES(9)									$65,282.90
126	drywall		1/2"	SF	$0.26	0.06	12,220	$3,177.20	733.2	
127			2x1/2"	SF	$0.52	0.12		$0.00	0	
128			5/8"	SF	$0.30	0.06	3,160	$948.00	189.6	
129			acces rs				15,380	$0.00	0	
130	drywall repair		1/2"	SF	$0.25	0.01		$0.00	0	
131	plaster repair		1/2"	SF	$0.50	0.03		$0.00	0	
132			acces'rs	SF	$0.10	0.03		$0.00	0	
133	paint		2 coats	SF	$0.16	0.02	15,380	$2,460.80	307.6	
134	carpet		28 oz	SF	$1.66	0.023	260	$431.60	5.98	
135	vinyl flooring		seamless	SF	$1.50	0.1	820	$1,230.00	82	
136	ceiling tr&tile			SF	$0.75	0.05		$0.00	0	
137	wall tile			SF	$1.75	0.2	264	$462.00	52.8	
138	floor tile		masonry	SF	$2.50	0.1		$0.00	0	
139	kit. seamless			SF	$4.50	0.1		$0.00	0	
140	wd flooring		parquet	SF	$1.85	0.15	4,870	$9,009.50	730.5	
141	fl refinish	20% unit	varthane	SF	$0.16	0.015		$0.00	0	
142	floor repair			SF	$2.50	0.1		$0.00	0	
143			base-wd2.5	LF	$0.20		1,380	$276.00	0	
144	SPECIALTIES(10)									$1,374.00
145	toilet and bath accessories		towel holder		$40.00		8	$320.00	0	
146			toilet tissue holder		$16.00		8	$128.00	0	
147			med cab		$32.00		8	$256.00	0	
148			waste		$83.00			$0.00	0	
149	wood lockers				$50.00	1.5	8	$400.00	12	

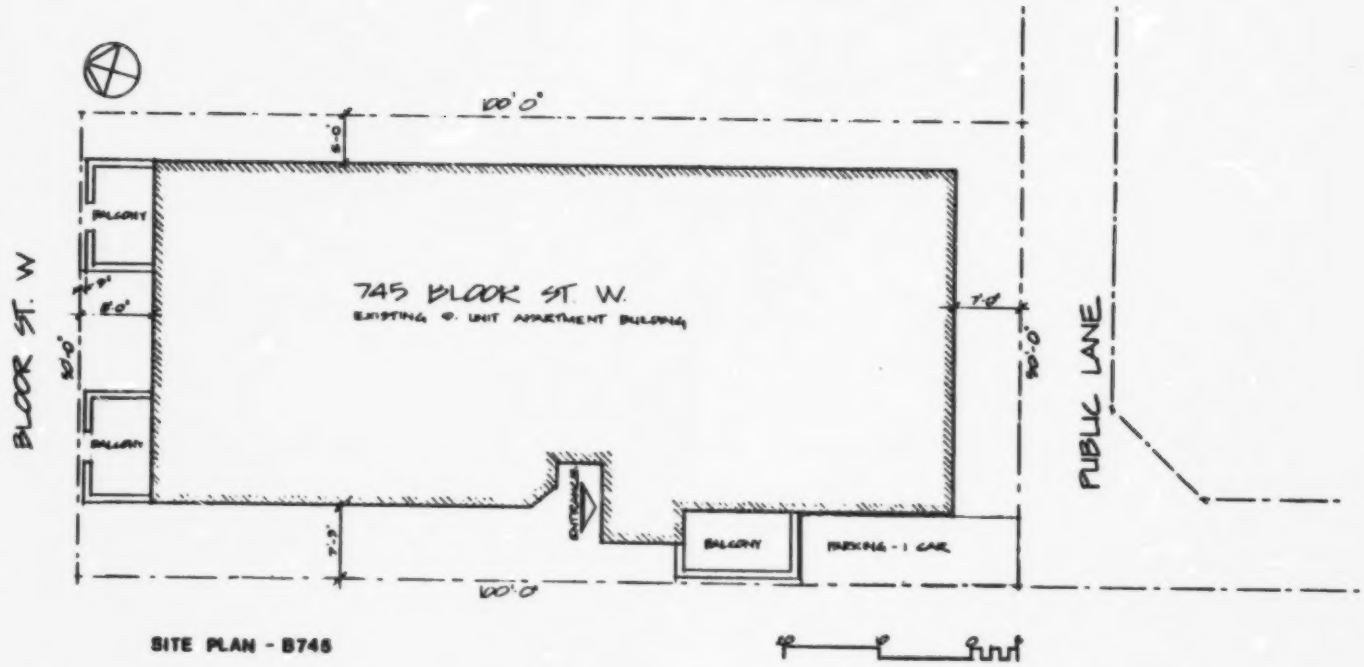
	1	2	3	4	7	8	10	11	12	13
150	EQUIPMENT(11)									$7,920.00
151	garbage compactor		5.5'dia	EA	$8,052.00	0		$0.00	0	
152	kitchen cabinets		top&bot	LIN FT	$90.00	1.5	64	$5,760.00	96	
153	vanities		lower	LIN FT	$60.00	0.85		$0.00	0	
154	washers		30"resid.					$0.00	0	
155	kitchettes		mtl(5'+)	EA	$1,170.00	6		$0.00	0	
156	CONVEYING SYSTEMS(14)									$97,100.00
157			geared	EA	$85,000.00			$0.00	0	
158			hydraulic	EA	$78,300.00		1	$78,300.00	0	
159			car	EA	$1,300.00		1	$1,300.00	0	
160			doors/entra	EA	$3,500.00		5	$17,500.00	0	
161								$0.00	0	
162	MECHANICAL(15)									$45,820.00
163	general		mech+plum	SF	$7.25		6,320	$45,820.00		
164	plumbing		wc	EA	$350.00	2		$0.00	0	
165			sink	EA	$275.00	2		$0.00	0	
166			bath tub	EA		2		$0.00	0	
167			shower	EA	$550.00	2		$0.00	0	
168			fixtures	EA	$275.00	2		$0.00	0	
169			jan. sink	EA		2		$0.00	0	
170			" fittings	EA	$320.00	2		$0.00	0	
171	ELECTRICAL(16)									$25,280.00
172	general			SF	$4.00		6,320	$25,280.00	0	
173	receptacle		wall	EA	$14.00	0.5		$0.00	0	
174	switch		wall	EA	$29.00	0.6		$0.00	0	
175								$0.00	0	
176								$0.00	0	
177								$0.00	0	
178								$0.00	0	
179										
180									4,026,368	
181									$22.50	rate
182							Subtotals	$276,159.21	$90,593.28	
183							TOTALS	$366,752.49		
184								8	#units	
185								$45,844.06	Per Unit Cost	
186								$58.03	Per SF Cost	
187								$97,100.00	elevator cost	
188								$33,706.56	Per unit cost without elevator	
189								$42.67	Per SF cost without elevator	

	14	15	16	17	18	19	20	21	22	23
32	EXISTING CONSTRUCTION									
33	quanity	materials $	labour (hrs)	Division Totals						
34										
35				$4,226.85						
36	1,580	$158.00	47.4							
37	1,937	$387.40	116.22							
38		$0.00	0							
39	1,300	$0.00	0							
40		$0.00	0							
41		$0.00	0							
42		$0.00	0							
43		$0.00	0							
44		$0.00	0							
45				$14,254.50						
46		$0.00	0							
47		$0.00	0							
48		$0.00	0							
49	1,300	$7,280.00	0							
50	1,300	$4,810.00	65							
51	1,300	$351.00	5.6							
52		$0.00	0							
53		$0.00	0							
54		$0.00	0							
55		$0.00	0							
56		$0.00	0							
57		$0.00	0							
58				$9,500.00						
59		$0.00	0							
60		$0.00	0							
61		$0.00	0							
62	400	$0.00	0							
63		$0.00	0							
64		$0.00	0							
65	2,000	$500.00	400							
66		$0.00	0							
67		$0.00	0							
68		$0.00	0							
69		$0.00	0							
70		$0.00	0							

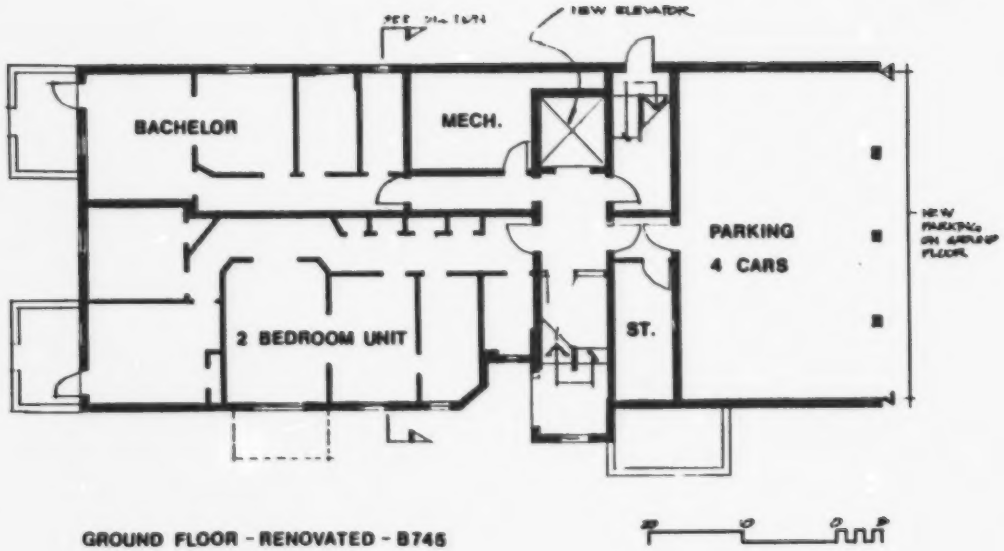
	14	15	16	17	18	19	20	21	22	23
71				$762.50						
72		$0.00	0							
73		$0.00	0							
74		$0.00	0							
75		$0.00	0							
76		$0.00	0							
77		$0.00	0							
78		$0.00	0							
79		$0.00	0							
80		$0.00	0							
81		$0.00	0							
82		$0.00	0							
83		$0.00	0							
84		$0.00	0							
85		$0.00	0							
86		$0.00	0							
87		$0.00	0							
88	500	$200.00	25							
89		$0.00	0							
90		$0.00	0							
91		$0.00	0							
92		$0.00	0							
93				$2,050.00						
94	160	$1,600.00	20							
95		$0.00	0							
96				$618.75						
97		$0.00	0							
98		$0.00	0							
99		$0.00	0							
100		$0.00	0							
101		$0.00	0							
102		$0.00	0							
103		$0.00	0							
104	500	$250.00	12.5							
105		$0.00	0							
106	500	$20.00	3							
107		$0.00	0							
108		$0.00	0							
109		$0.00	0							
110		$0.00	0							

	14	15	16	17	18	19	20	21	22	23
111				$57,203.33						
112	13	$5,0[illegible]58	19.5							
113	12	$1,500.00	3.6							
114	9	$5,949.00	27							
115		$0.00	0							
116		$0.00	0							
117	13	$1,300.00	19.5							
118		$0.00	0							
119		$0.00	0							
120	70	$36,996.75	0							
121		$0.00	0							
122		$0.00	0							
123		$0.00	0							
124	2	$4,800.00	0							
125				$22,877.08						
126	300	$78.00	18							
127		$0.00	0							
128	1,000	$300.00	60							
129	1,300	$0.00	0							
130	100	$25.00	1							
131	100	$50.00	3							
132	200	$20.00	6							
133	22,300	$3,568.00	446							
134	210	$348.60	4.83							
135	134	$201.00	13.4							
136		$0.00	0							
137	270	$472.50	54							
138		$0.00	0							
139		$0.00	0							
140		$0.00	0							
141	6,480	$1,036.80	97.2							
142	200	$500.00	20							
143		$0.00	0							
144				$176.00						
145	2	$80.00	0							
146	2	$32.00	0							
147	2	$54.00	0							
148		$0.00	0							
149		$0.00	0							

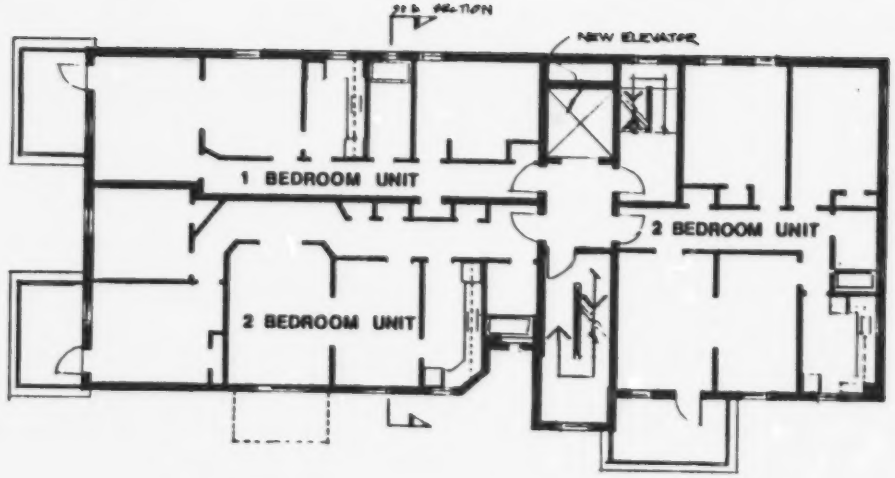
	14	15	16	17	18	19	20	21	22	23
150				$3,836.25						
151		$0.00	0							
152	31	$2,790.00	46.5							
153		$0.00	0							
154		$0.00	0							
155		$0.00	0							
156				$0.00						
157		$0.00	0							
158		$0.00	0							
159		$0.00	0							
160		$0.00	0							
161		$0.00	0							
162				$19,376.00						
163		$19,376.00	0							
164		$0.00	0							
165		$0.00	0							
166		$0.00	0							
167		$0.00	0							
168		$0.00	0							
169		$0.00	0							
170		$0.00	0							
171				$23,344.00						
172		$23,344.00	0							
173		$0.00	0							
174		$0.00	0							
175		$0.00	0							
176		$0.00	0							
177		$0.00	0							
178		$0.00	0							
179										
180	45,527		1,544.25	$158,225.26						
181			$22.50	rate						
182		$123,479.63	$34,745.63							
183		$158,225.26								
184			8	#units						
185			$19,778.16	Per Unit Cost						
186										
187										
188										
189										



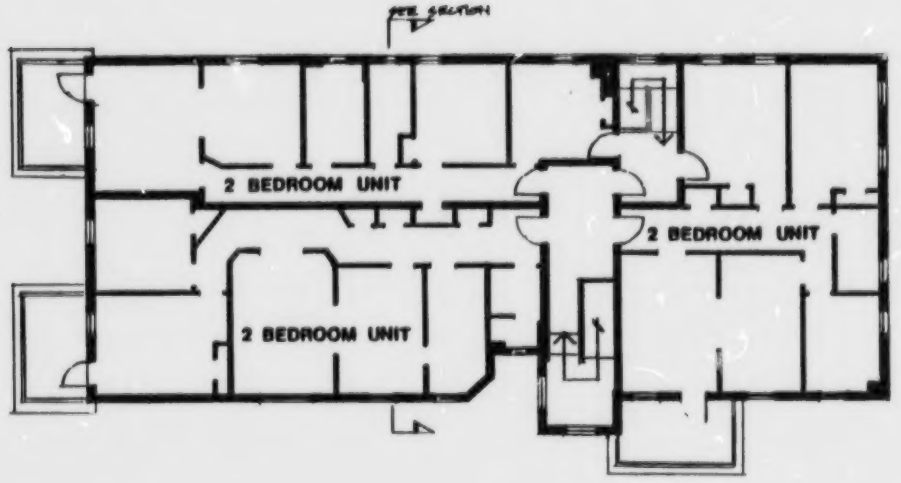
SITE PLAN - B745



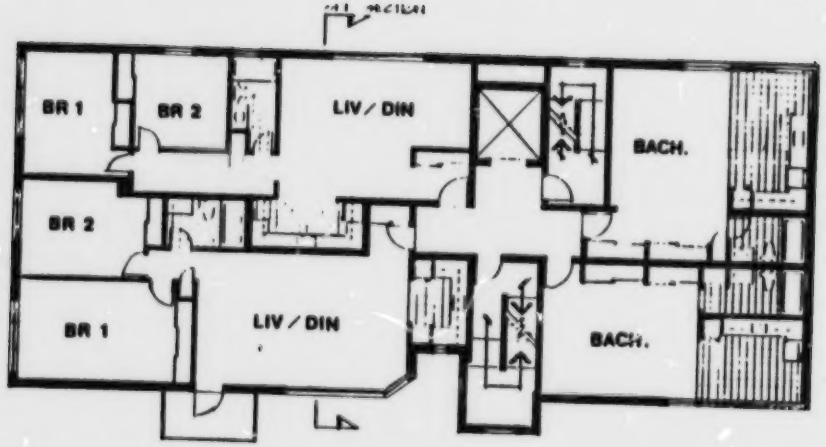
GROUND FLOOR - RENOVATED - B745



EXISTING TYPICAL FLOOR - RENOVATED - B745



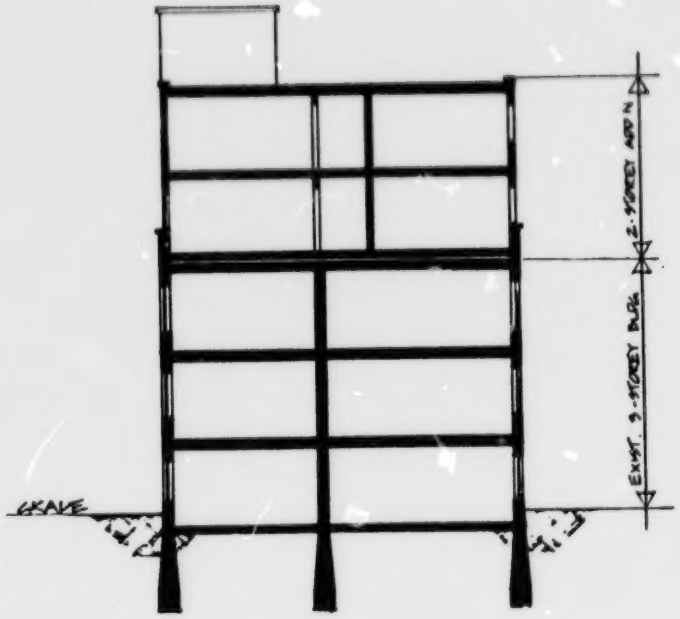
EXISTING TYPICAL FLOOR - 8745



PROPOSED TYPICAL FLOOR - B745

NORTH ELEVATION - 8746

WEST ELEVATION - 8746



SECTION - B745

Part F: 688 Sheppard Street East, North York

I. Introduction, and Intent
II. Proposal, General Description
III. Site Statistics and Present Zoning
IV. Building Statistics and Description
V. Proposal- General Description
VI. Proposal- Revised Statistics, Site and zoning
VII. Proposal- Building-configuration and description
VIII. Proposal- Building-scope of work.
IX. Proposal- Building-costing

I. Introduction, and Intent

The building at 688 Sheppard Ave East was included in the study as an example of a building in a suburban location to show the effects of the restrictions in these communities. The existing building is on a large lot, built to a low gross floor density and unit per acre density. In regard to the planning issues it would be typical to a segment of low rise apartment buildings of this era in the suburbs of the Metropolitan Toronto Area. The restrictions for this site of an allowed 75% coverage and high parking per unit requirement, impose restrictions which would allow a single story addition. Even with this reduction from multi story additions which may technically be possible the future density will be approximately 40% more than that allowed in the present zoning.

The physical characteristics are also typical to this segment in the Metropolitan Toronto area. The existing building is built with load bearing masonry walls and a open web steel joist floor system. The building construction would be classified in the Codes as a "non combustible construction". This characteristic makes this building eligible for funding under the C.M.H.C. programs as it is in conformance with the National Building Code and its supplements.

The other characteristic that this building displays is its unit mix. The building presently contains 35 units with the dominate unit type as a 'two bedroom' unit. This is contrary to many of the buildings in older parts of Toronto. As an example, this building provides information regarding the financial impact additions will have on such buildings.

II. Proposal, General Description

The proposal for the intensification of this building is to add ten additional units to the building. Due to the nature of the site in its proximity to shopping, the amenities of the neighboring parks, and its location on the major bus routes of Sheppard Ave., it would be suitable for specialty housing such as for senior citizens. The designation of a specialty use in most municipalities involves solving some of the planning problems inhererent in the site. It would provide a means of reducing the parking that would be required for a conventional site in other municipalities. However, North York does not contain any exemptions or bonuses for such housing from its onerous parking requirements. Therefore within the bounds of reality, the density has been lowered to approach a level of conformity to the present zoning for the site.

The additional units will mirror the present floor plans of the existing apartment units in order to simplify possible problems in matching the current service runs.

III. Site Statistics and Present Zoning

The site occupied by the building is on Sheppard Avenue East near the intersection of Bayview. It is served by a bus route along Sheppard Ave. The site is about one block from a major shopping center providing a full range of shops and services. The surrounding residential neighborhoods contain a mixture of single family homes and town houses. These are of a low density housing possibly averaging 0.6 x lot area. Along Sheppard Ave. are mixed residential apartments, some professional offices, churches and convenience commercial.

The Building is currently zoned as 'RM 3' by the City of North York. This category allows apartment buildings. The restrictions with the current zoning are numerous and complicated by the "low density" considerations. A building that is totally used for residential purposes is restricted to 0.75 x lot area as its density. In addition the parking requirement of 1.5 per unit further reduces the allowable density when the intensification of an existing building is considered. The existing building currently exceeds the permitted density by approximately 400 m2.

Site area-	3818 m2 [41,100 s.f..]
Building coverage-	804 m2 [8,655 s.f..]
Landscaped area-	⊜900 m2 [9,688 s.f..]
Gross floor area-	3,207 m2 [34,530 s.f..] or 0.84 x lot area.
Unit Count-	

	One Bedroom-	13
	Two Bedroom-	21
	Three Bedroom	1
Total		35
Parking provided-		@45 spaces

IV. Building Statistics and Description

The current building contains nine units. The gross floor area of the existing structure is 3,207 m2. The existing unit area to common area ratio is typical for a small building of this era. The present configuration of the building is as a three storey structure: the lower floor is occupied by six units of storage spaces and a furnace room containing the mechanical services for the building.

Built in approximately 1955 as a three and one half story walk up apartment building, the present building exhibits some of the characteristics of this age of construction. The building is built with 30 cm. load bearing masonry walls. These are configured as the exterior and two load bearing walls as the center corridor. The floor and roof system is a steel joist system of approximately 45 cm joists spanning an average of 6 m. Interior partitions are either of steel stud assemblies or in some cases of masonry construction.

The mechanical systems contained in the present building are representative of their age. The heating system is a low pressure hot water system with fin radiation units. The risers for both the heating and domestic hot water system appear to be galvanized steel pipes common in the 1950's. The electrical system distributes a 30 amp service to each unit. The visual inspection of this system would indicate that there has been little up grading to this system and would merit modification. As a three and one half story walk up apartment building, the current structure does not contain an elevator.

The general condition of the exterior envelope is that of a building of this era. The exterior masonry is in good condition, however it is anticipated that it will require some repairs and possibly some replacement of masonry units near the parapets of the building. The interior finishes are in good condition. The interior walls are plastered and will require some care taken in the installation of new mechanical systems in order to avoid total replacement. The windows are single glazed steel windows and will require replacement.

V. Proposal

The proposal is to construct ten additional units on the top of the existing structure. These will be one and two bedroom units having a similar floor plan as the existing units on the second and third floor of the building.

The layout or configuration of the proposed units is restricted by the existing configuration of the building. The entrance and the circulation system is provided at either end of the existing building. A new elevator will be provided at the North end of the existing building as an addition.

VI. Proposal- Revised Statistics, Site and zoning

The revised site statistics for the project, including the addition, are:

Site area-		3,818 m2 [41,100 s.f..]
Building coverage-		822 m2 [8,844 s.f..]
Landscaped area-		989.5 m2 [10,652 s.f..] or 26%
Total gross floor area-		4,104 m2 [44,179 s.f..] or 1.07 x lot area.
GFA of additions-		933.6 m2 [10,050 s.f..]
Unit Count		
	One Bedroom-	17
	Two Bedroom-	27
	Three Bedroom	1
Total		45
Parking required		68 spaces

For the additions to the Existing Building the following would be a list of variances to the existing Zoning;

i] Density- The new gross floor area of the building additions will be 933.6 m2 [10,050 s.f.], resulting in a total GFA of 4,104 m2 [44,179 s.f..] or 1.07 x lot area.

ii) Parking Count- The requirement is for 68 spaces, and the proposed site plan will provide 65 spaces. In this case relief would be required from the standard housing requirement through application to the Committee of Adjustment. Other variances required for the parking will be the size of spaces, and relief from the three meter set back from the RM2 zoning along the east side of the parking area.

As the list of variances to the existing zoning are minor in magnitude

and in number, it would be anticipated that these variances may be examined by the Committee of Adjustment, and may not require "re-zoning. The requirement for the Landscaped area is 901 m2 and the current building will provide 909 m2 resulting in a deficiency of 33.5 m2.

In this example the building is capable of suppourting two additional floors on the existing structure. It is built to a low density at the present time of 84%. With two additional floors on the building the resulting density would be at 1.26 x lot area. In many areas in the Metropolitan Toronto Area, this would be an acceptable density. However, it is the parking requirement of 1.5 spaces per unit that is a limitation on this site. Approximately 65 spaces can be provided on the site. With a two storey addition, the parking allocation would be at 1.25 spaces per unit. This was the standard in 1984 and was subsequently increased by North York. Therefore, this site would require a rezoning to allow the higher density and decreased parking standard. It was felt that with the absence of an established "Bonus" policy for assisted or special housing, a rezoning could be justified within the context of this study, and a lower density that could be obtained through a Committee of Adjustment variance would be the basis of this example of intensification.

VII. Mechanical/Electrical

- Exterior of building, lobby and corridors were reviewed. Boiler Room and other equipment rooms and suites were not accessible.
- Gas Service to the building was noted. The size suggests that the gas may be used for domestic hot water only. If so, building heating should be converted to gas.
- In addition to Division 15 and 16, Part F please note that corridirs are pressurized byF.A. For a building of this height we do not need pressurization for the smoke control.
- New top floor (addition) should be heated electrically.
- Plumbing can be extended.

VIII. Structural

From experience one can assume the the building framing is as follows:

The structure consists of exterior and interior corridor load bearing walls. The exterior walls consisting of 2 levels of 8" concrete block (1800 psi.) followed by 10" and 12" concrete block. The floors consist of 2 1/2" concrete reinforced with 6x6 6/6 mesh on gage pans on 12" to 14" OWSJ's.

The footings are designed for a probable 2 to 3 tons/psf, and the walls are carried by footings.

The walls appear sound and well founded and free of any detrimental cracks.

An additional light weight steel floor can structurally be carried by the wall using present day engineered masonry codes. The footings can also carry the additional loads if the soil tests justify an increase in the soil design pressures of approximately 15%.

The first step is to design the footings with the new floor and check by soil tests if the existing footings can carry this load.

If the soil capacity can be increased to (plus or minus) 30%, a possible 2 floors can be added.

IX. Proposal- Building-scope of work.

Division 1 - General Requirements
Bidders should include for:
Indirect Costs
Professional Fees
Service Connections
O.H.&P.

Contingency
Insurance (for performance bond and general comprehensive insurance)

Division 2 - Site Work
Landscaping at front of building and new sodded areas are provided.
New paving for
parking areas and new concrete walkways are provided.

Division 3 - Concrete
New 2 1/2 " (38 mm) concrete floors are required for the additions and the new cantilevered balconies.

Division 4 - Masonry
New brick is required to match existing up to the sill level of the first floor addition and to extend the elevator shaft the additional storey. Repointing of the existing brick is required in particular at the roof level.

Division 5 - Metals
All new construction for additions are to be light gauge metal framing set on the existing loadbearing walls. New metal balcony railing are required for the new units.

Division 6 - Wood and Plastics
New plastic laminate countertops are required in the existing kitchens and the laundry area. New wood lockers with wire mesh are to be provided for each new unit. Existing kitchen cabinets are to be refinished with sand and stain and/or replaced.

Division 7 - Thermal and Moisture Protection
Full batt insulation is to be provided in all exterior walls as well as 1 1/2" (38 mm) rigid insulation under the stucco finish. Between suites and between public areas and suites 2" (50 mm) of accoustical insulation is provided.
The new roofing is to be a standard 4 ply built up roof with prepainted metal flashing.

Division 8 - Doors and Windows
Doors to existing suites are acceptable and comply with 20 minute fire reequirements but new closures are required. All new doors, frames, and closures must have U.L.C. labels.
All windows to be replaced with thermally broken frames and sealed units.

Division 6 - Finishes
Minor alterations are required to the existing units to comply with minimum unit sizes. As well finishes will be disurbed in the bath and kitchen areas during riser replacement and window installation. Patching to these areas will be required. New partitions are to be 1/2" (12mm) drywall on metal studs. A percentage of the units will require new vinyl flooring in the kitchen and refinishing of parquet wood floors with sanding, sealer and varathane. Wall tiles are to be replaced in bath areas diaturbed during riser replacement. New carpet is required in corridors and lobbies throughout.

Division 10 - Specialties
New bath accessories are required for the apartment units.

Division 11 - Equipment
A new incinerator chute will be provided and connected to a new garbage compactor.

Division 12 - Furnishings
New kitchen cabinets will be installed in all new suites.

Division 13 - Special Construction

Division 14 - Conveying Systems
A new elevator must be provided in the building.

Division 15 - Mechanical
All galvanized hot water risers and branches will be replaced throughout the building. A percentage of valves on existing rads will require replacement as well. The existing boilers and burners will be replaced and converted to gas. Lines will be extended to service the new units. Kitchen and bath areas require new exhaust equipment and exit stairs and corridors require pressurization for smoke control. New firehose cabinets will be installed and sprinklers will be installed in new locker rooms, new garbage room and garbage chute.

Division 16 - Electrical
The existing fire alarm system and intercom system will be updated. Each unit will have new smoke and heat detectors. Emergency lighting units will be provided in the exit stairs and corridors. Ground fault receptacles will be installed in all kitchens and bath areas.

X. Proposal- Building-costing

	Existing	New
General Requirements(1)	$51,900.00	$60,500.00
SiteWork(2)	$21,700.00	$0.00
Concrete(3)	$0.00	$25,700.00
Masonry(4)	$500.00	$7,500.00
Metals(5)	$0.00	$41,100.00
Wood & Plastics(6)	$0.00	$0.00
Thermal & Moisture Protection(7)	$0.00	$71,400.00
Doors 118,077.38	$118,100.00	$55,900.00
Finishes(9)	$91,800.00	$118,100.00
Specialties(10)	$0.00	$1,700.00
Equipment(11)	$34,000.00	$8,700.00
Furnishings(12)	$0.00	$0.00
Special Construction(13)	$0.00	$0.00
Conveying Systems(14)	$0.00	$90,100.00
Mechanical(15)	$93,400.00	$82,000.00
Electrical(16)	$102,100.00	$35,700.00
Totals Div. 2 - 16	$461,500.00	$537,800.00

TOTAL	$975,000.00

	1	2	3	4	7	8	10	11	12	13
1									Existing	New
2								General Requirements(1)	$51,924.18	$60,501.07
3								SiteWork(2)	$21,670.00	$0.00
4								Concrete(3)	$0.00	$25,715.10
5								Masonry(4)	$500.00	$7,515.63
6								Metals(5)	$0.00	$41,066.30
7								Wood & Plastics(6)	$0.00	$0.00
8								Thermal & Mois. Protect'n(7)	$0.00	$71,384.39
9								Doors & Windows(8)	$118,077.38	$55,865.10
10								Finishes(9)	$91,761.42	$118,053.26
11								Specialties(10)	$0.00	$1,717.50
12								Equipment(11)	$34,039.50	$8,662.50
13								Furnishings(12)	$0.00	$0.00
14								Special Construction(13)	$0.00	$0.00
15								Conveying Systems(14)	$0.00	$90,100.00
16								Mechanical(15)	$93,370.00	$81,971.50
17								Electrical(16)	$102,130.00	$35,736.00
18								Totals Div. 2 - 16	$461,548.29	$537,787.27
19									TOTAL	$1,172,261.88
20	GENERAL REQUIREMENTS(1)								Cost/Unit	$26,050.26
21	Construction Value							$1,057,849.05		
22	indirect costs			6.00%				$63,470.94	$63,470.94	
23	prof. costs			12.00%				$126,941.89		
24	service connections			0.75%				$7,933.87	$7,933.87	
25	permit costs (75% actual cost)			1.00%				$7,933.87	$7,933.87	
26	O.H.&P.			10.00%				$105,784.91		
27	contingency			3.00%				$31,735.47	$31,735.47	
28	insurance	100%	perf.bond	0.50%				$5,289.25	$5,289.25	
29										
30	TOTALS	not included in costs shown below						SubTotal	$116,363.40	
31								Per unit Cost	$2,585.85	

	1	2	3	4	7	8	10	11	12	13
32	ELEMENT	code	elem. des.	unit des.	unit price	labour	quanity	materials $	Labour (HRS)	Division Totals
33										
34	SITEWORK(2)									$0.00
35	demolition		int. part.	SF	$0.10	0.03		$0.00	0	
36			conc. walls	SF	$0.20	0.06		$0.00	0	
37	backfill			CUFT				$0.00	0	
38	grading			CUFT				$0.00	0	
39	sod			SF	$0.15	0		$0.00	0	
40	lockstone			SF				$0.00	0	
41	turfstone			SF				$0.00	0	
42	conc. pavers		2'x4'	SF				$0.00	0	
43	asphalt paving	sup.&inst	1 layer 2"	SF	$0.42			$0.00	0	
44	CONCRETE(3)									$25,715.10
45	formwork			SF				$0.00	0	
46	bracing		2"x4"	SF	$0.40	0.025		$0.00	0	
47	plywood		3/4"	SF	$0.60	0.025		$0.00	0	
48	concrete	3000 psi	1'x1'x1'	CU.FT.	$5.60		390	$2,184.00	0	
49	conc. placem't		1'x1'x1'	CU.FT	$3.70	0.05	390	$1,443.00	19.5	
50	rebar		#6	CU.FT	$0.27	0.012	390	$105.30	4.68	
51	col'm pad		5x5x5		$10.13	2.33		$0.00	0	
52	col'm		1.5x5		$74.40	2.2		$0.00	0	
53	baseplates		2"x2"		$0.88	0.05		$0.00	0	
54	flr.conc.		2.5"	SF	$1.20	0.02	9,763	$11,715.60	195.26	
55	flr.mesh		6"x6"6/6	SF	$0.15	0.02	8,883	$1,332.45	177.66	
56	concrete refinishing		1/8" thoro.	SF	$0.64	0.025		$0.00	0	
57	MASONRY(4)									$7,515.63
58	masonry		4" brick	SF	$1.98	0.28		$0.00	0	
59			4" block-sol	SF				$0.00	0	
60			4" block-75	SF				$0.00	0	
61			6" block-75	SF				$0.00	0	
62			8" block-75	SF				$0.00	0	
63			10" block-7	SF	$2.33	0.08	3,011	$7,015.63	240.88	
64			repointing	SF	$0.25	0.2	2,000	$500.00	400	
65			4" block	SF	$2.33	0.08		$0.00	0	
66	G.R.C.		1/4" flat sh	SF	$1.60	0.063		$0.00	0	
67			3/8"	SF	$2.36	0.063		$0.00	0	
68			1/2"	SF	$3.14	0.063		$0.00	0	
69			5/8"	SF	$3.93	0.063		$0.00	0	

	1	2	3	4	7	8	10	11	12	13
70	METALS(5)									$41,066.30
71	Joists		10" 16ga.	1 linft	$1.81	0.06	4,467	$8,085.27	268.02	
72			8" 16ga.	1 linft	$1.40	0.06	380	$532.00	22.8	
73			6" 16ga.	1 linft	$1.32	0.06	3,704	$4,889.28	222.24	
74	studs		4" 16ga.	1 linft	$0.88	0.06	3,704	$3,259.52	222.24	
75			3.6" 22ga	1 linft	$0.30	0.04		$0.00	0	
76			2.5" 20ga	1 linft	$0.25	0.04	5,528	$1,382.00	221.12	
77	track		4" 16ga	1 linft	$0.88		1,852	$1,629.76	0	
78			3.6" 22ga	1 linft	$0.32			$0.00	0	
79			2.5" 20ga	1 linft	$0.28		1,382	$386.96	0	
80	Bridging		1.5"18ga	1 linft	$0.72	0.03	926	$666.72	27.78	
81	straps		1.5"18ga	1 linft	$0.52	0.03	1,389	$722.28	41.67	
82								$0.00	0	
83	soffit panel		26ga.galv	1 sqft	$0.33			$0.00	0	
84	Q'deck		24 ga.	1 sqft	$0.75			$0.00	0	
85	steel deck		1.5" corr.2	1 sqft	$1.37		8,604	$11,787.48	0	
86								$0.00	0	
87	furring ch		1.5"	LIN FT	$0.40	0.05	8,589	$3,435.60	429.45	
88	Siding Panel		22ga.pt	SF	$1.25	0.063	916.5	$1,145.63	57.7395	
89			acces'rs		$0.20		916.5	$183.30	0	
90	flashing		22ga.pt	LIN FT	$1.25	0.01	1,114	$1,392.50	11.14	
91	stair (str&pan)		44" treads		$49.00	1.11	32	$1,568.00	35.52	
92	WOOD & PLASTICS(6)									$0.00
93								$0.00	0	
94								$0.00	0	

	1	2	3	4	7	8	10	11	12	13
										$71,384.39
95	THERMAL & MOISTURE PROTECTION(7)									
96	fibreglass insulation		2" accoust	SF	$0.10	0.006	2,096	$209.60	12,576	
97			4"	SF	$0.21	0.006	6,244	$1,311.24	37,464	
98			6"	SF	$0.31	0.006		$0.00	0	
99			8"	SF		0.006	8,883	$0.00	53,298	
100			10"	SF	$0.55	0.006		$0.00	0	
101	rigid		1.5" poly		$0.30	0.006	13,885	$4,165.50	83.31	
102			2"		$0.40	0.006		$0.00	0	
103			3" rigid	SF	$0.50	0.025		$0.00	0	
104	building paper		215#	SF	$0.05	0.006		$0.00	0	
105	vapour barrier		6 mil	SF	$0.04	0.006	15,127	$605.08	90,762	
106	waterproofing		(garage slab	SF	$1.31	0.08		$0.00	0	
107	prot. b'd			SF	$0.32	0.08	8,883	$2,842.56	710.64	
108	roofing		3ply	SF	$0.86	0.08	8,883	$7,639.38	710.64	
109	stucco			SF	$1.50	0.05	6,244	$9,366.00	312.2	
110	DOORS & WINDOWS(8)									$55,865.10
111	doors	hdwr+frn	solid wd	EA	$391.66	1.5	10	$3,916.60	15	
112			closer	EA	$125.00	0.3	19	$2,375.00	5.7	
113			metal	EA	$661.00	3	11	$7,271.00	33	
114			hollow wd	EA	$210.00	1.5	26	$5,460.00	39	
115			solid wd< fr	EA	$235.00	1		$0.00	0	
116			fold wdx4	EA	$100.00	1.5	37	$3,700.00	55.5	
117	windows	sup & ins	alum 2x2	EA	$93.96			$0.00	0	
118			alum 2.5/2	EA	$146.81			$0.00	0	
119			alum 5/4.5	EA	$528.53			$0.00	0	
120			alum 5.5/5	EA	$710.57			$0.00	0	
121			wd. 3x8	EA	$237.00			$0.00	0	
122			alum	SF	$24.00		1,242	$29,808.00	0	
123			garage dr		$2,400.00			$0.00	0	

	1	2	3	4	7	8	10	11	12	13
124	FINISHES(9)									$118,053.26
125	drywall		1/2"	SF	$0.26	0.06	36,774	$9,561.24	2,206.44	
126			2x1/2"	SF	$0.52	0.12		$0.00	0	
127			5/8"	SF	$0.30	0.06		$0.00	0	
128			acces'rs				36,774	$0.00	0	
129	drywall repair		1/2"	SF	$0.25	0.01		$0.00	0	
130	plaster repair		1/2"	SF	$0.50	0.03		$0.00	0	
131			acces'rs	SF	$0.10	0.03		$0.00	0	
132	paint		2 coats	SF	$0.16	0.02	31,277	$5,004.32	625.54	
133	carpet		28 oz	SF	$1.66	0.023	990	$1,643.40	22.77	
134	vinyl flooring		seamless	SF	$1.50	0.1	568	$852.00	56.8	
135	ceiling tr&tile			SF	$0.75	0.05		$0.00	0	
136	wall tile			SF	$1.75	0.2	550	$962.50	110	
137	floor tile		masonry	SF	$2.50	0.1		$0.00	0	
138	kit, seamless			SF	$4.50	0.1		$0.00	0	
139	wd flooring		parquet	SF	$1.85	0.15	6,133	$11,346.05	919.95	
140	fl refinish	20% unit	varthane	SF	$0.16	0.015		$0.00	0	
141	floor repair			SF	$2.50	0.1		$0.00	0	
142								$0.00	0	
143	SPECIALTIES(10)									$1,717.50
144	toilet and bath accessorie		towel holder		$40.00		10	$400.00	0	
145			toilet tissue holder		$16.00		10	$160.00	0	
146			med cab		$32.00		10	$320.00	0	
147			waste		$83.00			$0.00	0	
148	wood lockers				$50.00	1.5	10	$500.00	15	
149	EQUIPMENT(11)									$8,662.50
150	garbage compactor		5.5'dia	EA	$8,052.00	0		$0.00	0	
151	kitchen cabinets		top&bot	LIN FT	$90.00	1.5	70	$6,300.00	105	
152	vanities		lower	LIN FT	$60.00	0.85		$0.00	0	
153	washers		30"resid.					$0.00	0	
154	kitchettes		mtl(5ft)	EA	$1,170.00	6		$0.00	0	
155	CONVEYING SYSTEMS(14)									$90,100.00
156			geared	EA	$85,000.00			$0.00	0	
157			hydraulic	EA	$78,300.00		1	$78,300.00	0	
158			car	EA	$1,300.00		1	$1,300.00	0	
159			doors/entra	EA	$3,500.00		3	$10,500.00	0	
160								$0.00	0	

	1	2	3	4	7	8	10	11	12	13
161	MECHANICAL(15)									$81,971.50
162	general		mech+plum.	SF	$7.25		8,934	$64,771.50		
163	plumbing		wc	EA	$350.00	2	10	$3,500.00	20	
164			sink	EA	$275.00	2	10	$2,750.00	20	
165			bath tub	EA		2	10	$0.00	20	
166			shower	EA	$550.00	2		$0.00	0	
167			fixtures	EA	$275.00	2	30	$8,250.00	60	
168			jan. sink	EA		2		$0.00	0	
169			" fittings	EA	$320.00	2		$0.00	0	
170	ELECTRICAL(16)									$35,736.00
171	general			SF	$4.00		8,934	$35,736.00	0	
172	receptacle		wall	EA	$14.00	0.5		$0.00	0	
173	switch		wall	EA	$29.00	0.6		$0.00	0	
174								$0.00	0	
175								$0.00	0	
176								$0.00	0	
177								$0.00	0	
178										
179									8,938.2895	
180									$22.50	rate
181							Subtotals	$386,189.25	$201,111.51	
182							TOTALS	$587,300.76		
183								10	#units	
184								$58,730.08	Per Unit Cost	
185								$65.74	Per SF Cost	
186								$90,100.00	elevator cost	
187								$49,720.08	Per unit cost without elevator	
188										

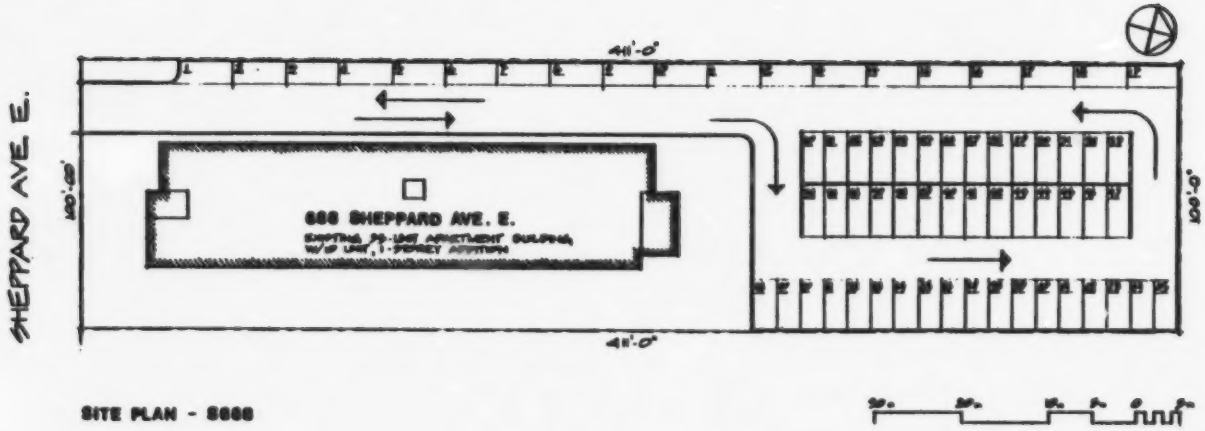
	14	15	16	17	18	19	20	21	22
32	quanity	materials $	labour (hrs)	Division Totals					
33									
34				$21,670.00					
35		$10,325.00	0						
36		$0.00	0						
37		$0.00	0						
38		$0.00	0						
39		$5,000.00	0	landscape					
40		$0.00	0						
41		$0.00	0						
42	250	$0.00	0						
43	15,000	$6,345.00	0						
44				$0.00					
45		$0.00	0						
46		$0.00	0						
47		$0.00	0						
48		$0.00	0						
49		$0.00	0						
50		$0.00	0						
51		$0.00	0						
52		$0.00	0						
53		$0.00	0						
54		$0.00	0						
55		$0.00	0						
56		$0.00	0						
57				$500.00					
58		$0.00	0						
59		$0.00	0						
60		$0.00	0						
61		$0.00	0						
62		$0.00	0						
63		$0.00	0						
64	2,000	$500.00	400						
65		$0.00	0						
66		$0.00	0						
67		$0.00	0						
68		$0.00	0						
69		$0.00	0						

	14	15	16	17	18	19	20	21	22
70				$0.00					
71		$0.00	0						
72		$0.00	0						
73		$0.00	0						
74		$0.00	0						
75		$0.00	0						
76		$0.00	0						
77		$0.00	0						
78		$0.00	0						
79		$0.00	0						
80		$0.00	0						
81		$0.00	0						
82		$0.00	0						
83		$0.00	0						
84		$0.00	0						
85		$0.00	0						
86		$0.00	0						
87		$0.00	0						
88		$0.00	0						
89		$0.00	0						
90		$0.00	0						
91		$0.00	0						
92				$0.00					
93		$0.00	0						
94		$0.00	0						

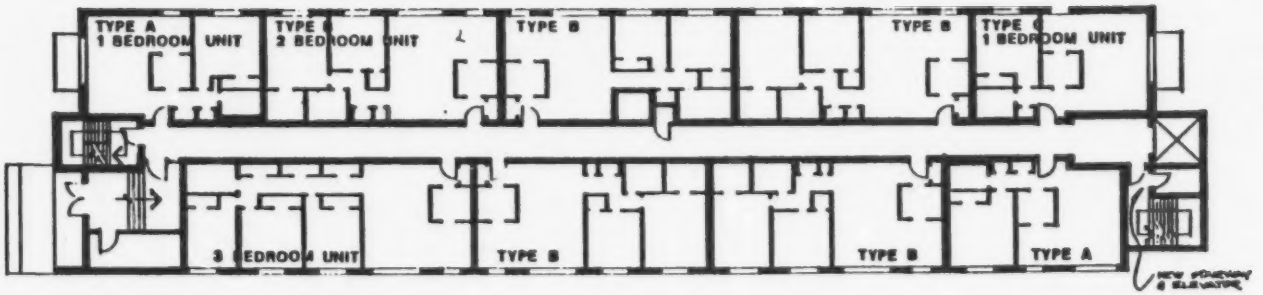
	14	15	16	17	18	19	20	21	22
95				$0.00					
96		$0.00	0						
97		$0.00	0						
98		$0.00	0						
99		$0.00	0						
100		$0.00	0						
101		$0.00	0						
102		$0.00	0						
103		$0.00	0						
104		$0.00	0						
105		$0.00	0						
106		$0.00	0						
107		$0.00	0						
108		$0.00	0						
109		$0.00	0						
110				$118,077.38					
111	35	$13,708.10	525						
112	43	$5,375.00	129						
113	8	$5,288.00	24						
114	12	$2,520.00	18						
115	12	$2,820.00	12						
116		$0.00	0						
117		$0.00	0						
118		$0.00	0						
119	68	$35,939.70	0						
120	70	$49,740.08	0						
121		$0.00	0						
122		$0.00	0						
123		$0.00	0						

	14	15	16	17	18	19	20	21	22
124				$91,761.42					
125	12,056	$3,134.56	723.36						
126		$0.00	0						
127		$0.00	0						
128		$0.00	0						
129		$0.00	0						
130	420	$210.00	12.6						
131		$0.00	0						
132	86,157	$13,785.12	1,723.14						
133	3,960	$6,573.60	91.08						
134		$0.00	0						
135		$0.00	0						
136		$0.00	0						
137		$0.00	0						
138		$0.00	0						
139		$0.00	0						
140	21,465.5	$3,434.48	321.9825						
141		$0.00	0						
142		$0.00	0						
143				$0.00					
144		$0.00	0						
145		$0.00	0						
146		$0.00	0						
147		$0.00	0						
148		$0.00	0						
149				$34,039.50					
150	1	$8,052.00	0						
151	210	$18,900.00	315						
152		$0.00	0						
153		$0.00	0						
154		$0.00	0						
155				$0.00					
156		$0.00	0						
157		$0.00	0						
158		$0.00	0						
159		$0.00	0						
160		$0.00	0						

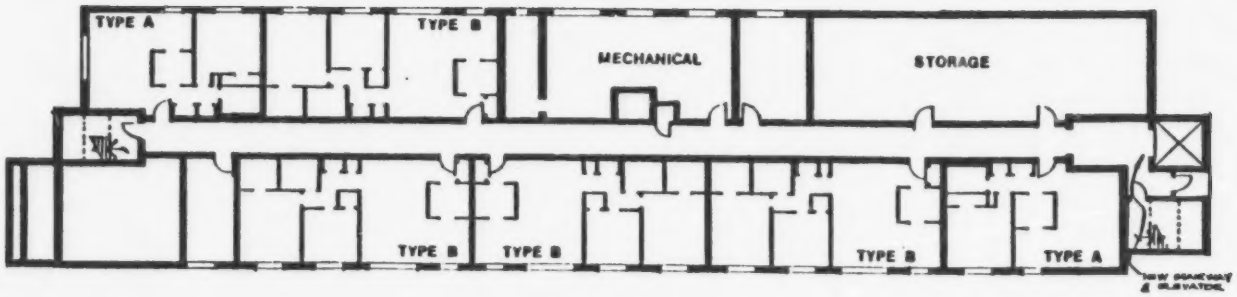
	14	15	16	17	18	19	20	21	22
161				$93,370.00					
162		$84,770.00	0						
163	5	$1,750.00	10						
164	5	$1,375.00	10						
165	5	$0.00	10						
166		$0.00	0						
167	15	$4,125.00	30						
168		$0.00	0						
169		$0.00	0						
170				$102,130.00					
171		$102,130.00	0						
172		$0.00	0						
173		$0.00	0						
174		$0.00	0						
175		$0.00	0						
176		$0.00	0						
177		$0.00	0						
178									
179			3,766.5625						
180			$22.50	rate					
181		$385,800.64	84,747.6563						
182		$470,548.29							
183			35	*units					
184			$13,444.24	Per Unit Cost					
185				Per SF Cost					
186									
187									
188									



SITE PLAN - 666



MAIN FLOOR - EXISTING - 8688



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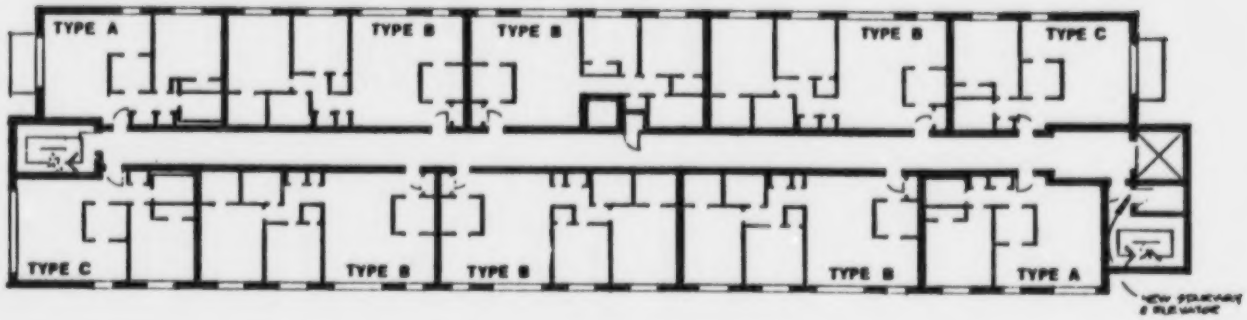
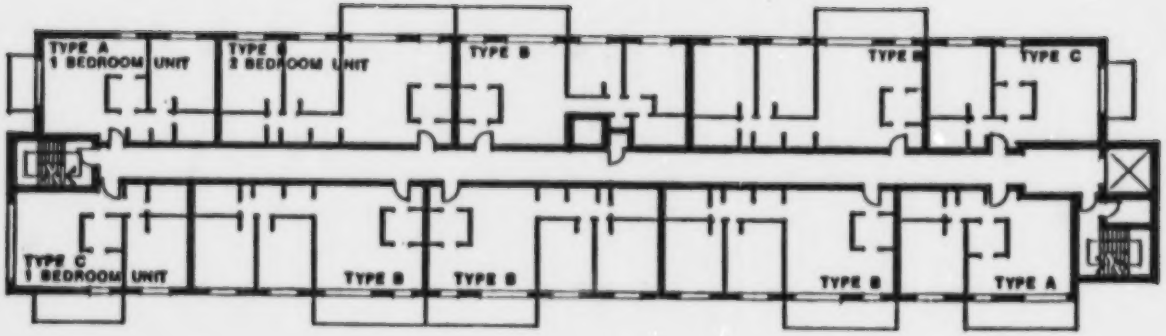
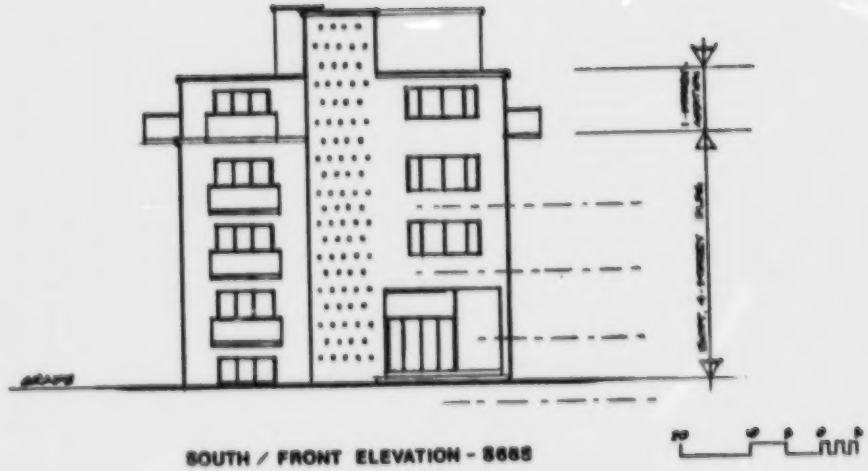


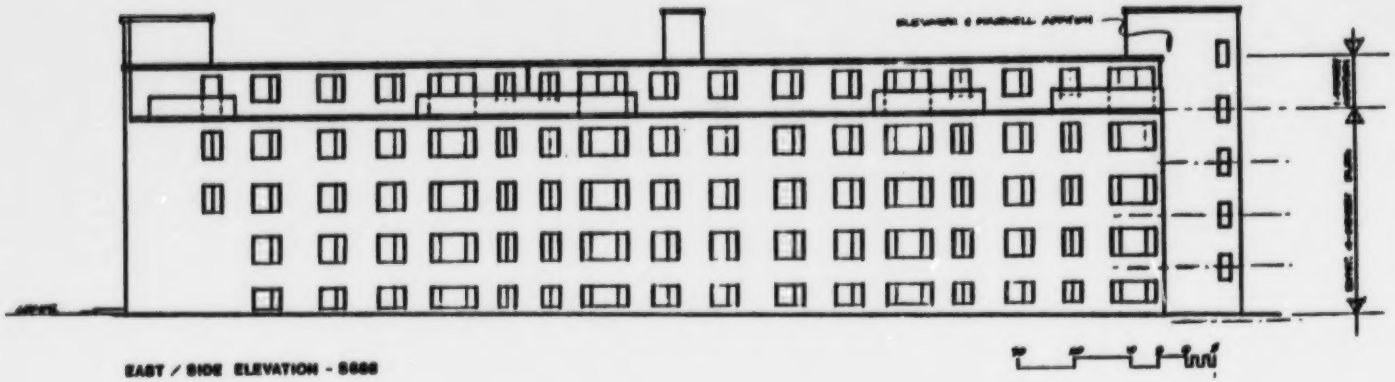
THIRD & FOURTH FLOORS - EXISTING - 6688



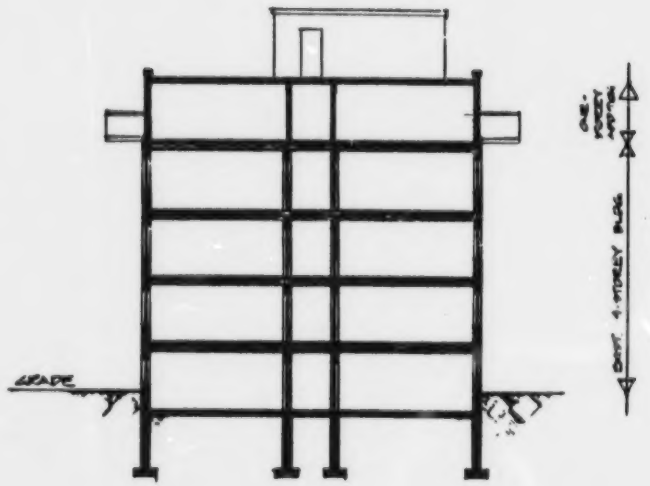
PROPOSED FIFTH FLOOR - 8666



SOUTH / FRONT ELEVATION - SCALE



EAST / SIDE ELEVATION - 5688



SECTION - S688

Stage Three

Part 6: Financial Feasibility Analysis

I. Introduction

This section examines the financial feasibility of the various intensification schemes offered in the design section. The purpose of this section is to examine the capital costs, incremental costs, and their effect on the finances of the three proposals. The financial implications of the proposals are then examined as to the mode of tenure and the effects on the rent schedules or on the value of the projects. This is termed as the "Rental Tenure Costing."

The method of analysis ["Rental Tenure Costing"] relies on the costing derived from the three designs as contained in Sections D, E & F for the proposals on Walmer Road, Bloor Street, and Sheppard Ave. The capital construction costs for both the additions and the renovations of the existing units are given in detail in these sections. The assumptions, options and method of costing are given in the explanation of the projects. This section of the report examines these costs as part of Capital costs of the total project or development costs.

The base for the comparison between the various proposals for Walmer Road, Bloor Street, and Sheppard Avenue, is a "Rental Tenure" model to show the simple state of an "intensified" private rental project. In this mode of development, the costs and benefits can be shown as they affect the rents of the buildings and thus afford a simple cost/benefit analysis of the intensification of the various schemes. Shown as Mode [i].

The information for the base rental projection is taken from either the Real Estate Listings or has been obtained directly from representatives of the owners. The capital costs are taken from the design sections to establish the construction costs for the renovations and additions. These are then combined with assumed development costs to reach a project cost. The project cost combines the purchase price, construction and development costs for the total financing that the project must bear. The new rents are calculated to support the project and are compared to the current rents of the unimproved building.

Purchase prices of low-rise buildings seem to be distorted. The variance in values when seen from some common measurements, such as a "permit price", land cost, income value indicates these properties do not reflect a common measurement of value. For instance the rule of thumb

would be a per unit value of approximately $30,000 per unit for well located buildings in rentable condition. This standard, however, would not apply to many buildings in the Real Estate Listings and in particular to 688 Sheppard Avenue.

Although this method attempts to reduce the variables through conservative assumptions that affect the projected total financing costs and future rents, to a minimum, the original purchase cost of the building is the variable that must be examined in more detail before the listed price is accepted. In the case of the Sheppard Ave example the listed price of the property is not justified by the income for the property. In these cases adjustments will be given in order that the purchase price does not distort the comparisons. This is adjusted by 10% in the first model, mode [i] of the examples of the rental tenure modeling for each project.

For the purpose of this study it is proposed that for a second assessment of the feasibility of the building, that a simple income valuation be used in determining a revised purchase price. This would be to use the stated value of income, deduct operating expenses, and calculate the value supported at 12% mortgages of the remaining amount. This will be termed in the study "Revised Purchase value due to income", and shown as Mode [ii] in the rental tenure modeling.

For the Sheppard Ave. Project the calculation of net income [$121,940.] after operating expenses would support a mortgage of $975,301.00. Allowing for an annual rent increase of 4-6%, or an annual increase in property values, would mean that this average value should be in the order of $1,024,066.00 and would result in a per unit value of $29,259.00.

The other comparison is to examine the buildings as simple renovations and not include the additions portion of the project. This will offer a means of comparing the benefits of the intensification within the context of each individual example. This is shown as Mode [iii].

The measurement of the buildings used in the modeling examined thus far in the study, is a comparison of the existing average rents before and after the intensification, of the existing units located in the existing building. Since these buildings have been subject to rent control the existing rents may be distorted. With the scope of this study we have not arrived at an acceptable method of analyzing the rent schedual and determining whether it is an average market rent. The present rents have been accepted but may distort the conclusions of the individual examples. The comparison of new average rents with the old average rents may not reflect the true market value. For example in the two buildings on Walmer Road in Toronto for comparable units of the same age, same size

of building, etc. there is a variance of $75.00 per month. From further investigation this is due to the efforts of one landlord to adjust the rents through application to the Rent Review Commission for higher than the allowed rent increase. Again the simple measurement of comparing old and new may contain some distortions.

An additional model is used to begin to establish a market rent for the project. This is shown as Mode [iv] and this method examines the 'replacement value' of each project. It simply calculates the cost of reconstructing a similar building for the rental market.

The maximum physical diversity allowed on various properties is another factor open to manipulation. In most buildings surveyed a two story addition is physically possible. In some cases a three story addition may be built. The reality of the situation is that the municipalities and the planning practice may not permit this degree of intensification. We then have another potential distortion in that costs for the new units and other improvements decrease with the size of the additions. Therefore another factor is identified as affecting the feasibility of the project.

In each case where private rental is assumed there have been two assistance programs used in the financial feasibility analysis. These are the RRAP program for the renovation of the existing units in each project. The other program is the Convert to Rent program of the Ontario Government. In both cases these are given as interest free loans for a period of ten years and then converted to mortgages. The details of the programs will be attached to the final copies of the report as the programs are under review and some conditions may change which may affect their use in this context.

II. Rental Tenure Costing

The assumptions and method of constructing the simple rental analysis of the financial feasibility for each project is given below. The abbreviated titles correspond to the Costing Charts attached to this report and are supplemented with an explanation of the assumptions, methods, and factors used in the calculations.

This section examines the purchase costs and operating expenses of existing building

1) Asking Price -	Price given on Real Estate listing or obtained from owner's representative.
2) Existing Units-	The number of units in the existing building.

3) Per Unit Cost- The asking price divided by the number of units.

4) Purchase Price- This allows for a lesser price than the asking price for the building.

5) Per Unit Purchase Cost- This is the purchase price of the building divided by the number of units.

6) Gross Income- As indicated on Real Estate listings.

7) Estimated expenses- These are the total expenses as stated in the Real Estate listings or as obtained from the owner's representative. This contains both the taxes and the operating expenses for the existing building.

8) Existing Taxes- These are the total taxes as stated ..... the owner's representative.

9) Existing Common Expenses- These are the total common expenses as stated in .... owner's representative.

10) Existing Expenses/Month- A monthly estimate per unit of the total expenses per month as indicated in item #6.

11) Existing Taxes/Month- A monthly estimate per unit of the total taxes as estimated in item #7.

12) Existing Com. Exp/Mo- A monthly estimate per unit of the total common expenses as contained in item #8.

Note: It is assumed that the "Existing Common Expenses" include the empty costs, routine maintenance, charges, insurance, and other operating expenses.

13) Rehabilitation Existing- This section contains the rehabilitation costs of the existing portions of the building. Contained in this section are the costs of the as outlined in Part D costs for renovation schemes. These are general contract prices and contain general contract mark ups as outlined.

14) Rehabilitation Costs- Costs for the rehabilitation of the existing units as estimated.

15) Rehabilitation/Unit- Costs for the rehabilitation of an average unit.

Note: It is assumed that the average cost per unit is of the rehabilitation of the existing units will contain expenses for the common areas and services not contained within the perimeter of the individual unit.

New Construction

This section contains the costs for the new units of the project as outlined in the other sections of the study. This varies as the method of the construction used for the additions . These are general contract prices and contain general contract mark-ups as outlined.

18) No. of New Units- This is the proposed number of units to be contained in the additions.

19) Area Constructed- This is the gross square footage of new construction.

20) New Unit Cost- This is the estimate for the total construction attributed to the construction of the new units as outlined elsewhere in the in the study.

21) Per Unit Cost- This item factors the "new unit costs" (Item #20) by the number of proposed new units (item #18).

22) Per Square ft.- This item factors the "new unit cost' (Item #20) by the new additions gross square footage.

23) Rehab. & New Costs- This item totals cost from "Rehabilitation Costs" (Item #14) and "New Unit Costs (Item # 20).

24) Project Costs- This section examines the development or the soft costs for the project.

25) Contingency-5%- This item is the contingency amount for the construction costs as per Item 23 (Rehabilitation and New Construction Costs). The contingency is 5%.

26) Fees-15%- This item is the amount for the legal services , design, and engineering , building permits, surveys, etc. as a development cost of the project. This item is 15% of the "Rehabilitation and New Construction".

27) Interim Financing- This item projects a six month construction schedule and was the value of the"Rehabilitation and New

Construction" at 12% interest for a three month period to model progress drawings from start up to completion of the construction phase.

28) Marketing-2%- This item is estimated to cover the costs of renting the new units.

29) Financing-2%- This item is an estimate of the fees to arrange the final mortgages for the property and is 2% of the previous capital and staff costs.

30) Project Costs- This item is a sum of items 25 to 29 as a subtotal.

31) Project Capital Costs- This item is a sum of items 23 & 30 as a capital cost for the entire construction program and the development costs for the project. This also includes the purchase price as item #4.

GRANTS

32) RRAD- This program sponsored by the CMHC for the existing buildings is calculated at the previous maximum of $3,750.

33) Conv.to Rent- This program: Convert to Rent is a practical program of $7,000 as an interest free loan for 10 years for the construction of the new units.

34) Grants Total- This item is the subtotal of the loans as per Items 32 & 33.

35) Equity,required- The assumed equity is 12% of the project capital costs as simple interest. (Item 31) less the Grants (Item 34).

36) Equity Payment/Month- This is calculated at a rate of return of 12% simple annual interest and is shown as a cost.

37) Mortgage-12%- This item assumes a mortgage on a 25 year term at 12% for the projects capital costs less the grants and equity as an annual mortgage cost.

38) Mortgage Paym't/Mo- This item displays the monthly mortgaging costs.

39) Operat'g Cost/Mo- This item takes the original monthly operating costs of Item #9, Existing Expenses per Month, decreases the expenses by 10% for the energy and maintenance savings

as a result of the reconditioning of the building and uses the new total unit count for the building.

40) Mo. Rent Income- This item sums the monthly cost of the return on equity, mortgage costs, and operating costs to project an average monthly income required to support the project.

UNIT RENTS

41) Ave. Rent Ext.- This item uses information from the Real Estate listing as the total income for the existing property factored by the number of existing units to arrive at an average monthly rent.

42) Ave. Rent- This item computes the average rent for the improved building but does not subdivided this figure into various sub categories of unit types, existing units or new units.

42) Ave. R. N. Ext- This item is the average rent of the "existing units" in the renovated project. It is factored to allow a 15% difference between these units and the new units in the addition.

43) Ave. R. New- This item is the average rent of the new units in the renovated project. It is factored to allow 15% difference between these units and the new ones in the addition.

46) Increase,old %- This item compares the new average rent with the old average rent in the building.

688 Sheppard Ave East, Cost Comparisons

The first examination of the financial feasibilities of the project utilizes the charts described as "Present Costs-Rental Tenure" in the previous part of this section. This primary model of the feasibility of the project is shown below as "mode [i]"and contains the assumed values in this chart;

Mode [i]	
Asking price	$1,550,000.
Existing units	35
Purchase cost	$1,395,000.
No. of new units	10
Rehab costs	$461,500.
New unit cost	$537,800.
PROJECT COSTS	$293,300.

PROJECT CAP. COSTS	$2,687,600.

The result of the intensification and renovation of the existing units is that the projected rent schedule would be as follows;

Ave. Rent Ext.	$483.00
Ave Rent	$734.00
Ave. R. N. Ext	$679.00
Ave. R. New	$789.00
Increase,old %	30.0

The "existing units" in the building after renovations would increase in retail charges by 29% in order to bear the costs of the renovations and additions.

As a comparison to the first model [i], the "purchase price " was adjusted to reflect the value of the existing building base on the income of the present property in the next model. This is shown below as mode [ii];

[ii]	
Asking price	$1,550,000.
Existing units	35
Purchase cost	**$1,024,100.**
No. of new units	10
Rehab costs	$461,500.
New unit cost	$537,800.
PROJECT COSTS	$285,900.
PROJECT CAP. COSTS	$2,309,300.

The result of the intensification and renovation of the existing units is that the projected rent schedule would be as follows;

Ave. Rent Ext.	$483.
Ave Rent	$647.
Ave. R. N. Ext	$598.
Ave. R. New	$695.
Increase,old %	**19.**

The existing units with the building after renovations and additions would increase in rental charges by 19% in order to bear the costs of the renovations and additions. This model when compared with mode [i] shows a reduction in the increased rental charges of 10% through a reduction in the purchase price. this example also demonstrates the opinion that many

of the low rise buildings show a distorted value in the "asking " price of the real estate listing when compared to the net income generated by the building.

As a comparison to the first model [i], the building was examined as a simple renovation without the addition. With the appropriate adjustments, the following values are shown below as mode [iii];

[iii]	
Asking price	$1,550,000.
Existing units	35
Purchase cost	$1,395,000.
No. of new units	0
Rehab costs	**$479,600.**
New unit cost	$0.
PROJECT COSTS	$150,000.
PROJECT CAP. COSTS	**$2,024,700.**

The result of limiting the scope of work to the renovation of the existing units, the projected rent schedule would be as follows;

Ave. Rent Ext.	$483.
Ave Rent	$719.
Ave. R. N. Ext	$719.
Increase,old %	**33.**

In mode [iii] an adjustment has been made to reflect the construction reality that would result in a slight increase over the "Rehab costs" when included in the larger scope of work, as displayed in mode [i].

After renovations the existing units would increase in retail charges by 33% in order to bear the costs of the renovations. When this mode is compared with mode [i], the costing analysis shows that the additions reduce the rent increase by 4%.

The replacement value of the number of units contained in the 'intensified' as displayed in mode [i] has been calculated. This would involve the replacement of 45 new units in a newly constructed building. a number of adjustments have been made in the financial models used in modes [i-iii]. These include the purchase value of the land, length of the project schedule, and the value of the subsidy program. The values for new construction are taken for the 1985 edition of "Yards sticks for Costing" by Construction Data Systems ltd., and Southam Business Publications.

The replacement value of project as shown for Sheppard Ave. with the following values are shown below as mode [iv];

NEW CONSTRUCTION	
New units	45
Parking area	20,000 sq.ft..
Apts.. etc.	44,173 sq.ft..
Const. Costs	
Site services,etc	$100,000.
Parking area-3.50	$70,000.
Apts.. etc.- 45.00	$1,987,800.
Land Cst/unit	$540,000.
PROJECT COSTS	$2,697,800.
cst/unit	$60,000.
Contingency-5%	$134,900.
Fees-15%	$323,700.
Int. Financing	$161,900.
Marketing-2%	$39,800.
Financing-2%	$67,200.
PROJECT COSTS	$727,300.
PROJECT CAP. COSTS	$3,425,100.
Cst/unit	$76,100.
GRANTS	
Renterprise	$675,000.
PROJECT FINANCING	
Equity,required	$412,500.
Equity Pay/mo	$4,300.
Mortgage-12%	$2,337,600.
" paym't/mo	$24,100.
operat'g cost/mo	$7,000.
UNIT RENTS	
Total Units	45
Ave Rent	$786.

Compare to Int.	0.07

The result of the financial model of [iv] is that the increased rental charges would be 7% over the charges in mode [i] which are for the intensification of the existing building. This model is offered as a "conservative" estimate as the land value used in mode [iv] does not reflect the purchase and demolition costs as would be involved in the direct replacement of the Sheppard Ave Units. In addition the level of subsidy through the available 'Renterprise' program has been increased in mode [iv]. These adjustments reduce the "costs" of the project, yet result in an increase over the renovation and additions to the existing building.

27 Walmer Road, Cost Comparisons

The first examination of the financial feasibilities of the project utilizes the charts described as "Present Costs-Rental Tenure" in the previous part of this section. This primary model of the feasibility of the project is shown below as "mode [i]"and contains the assumed values in this chart;

27 Walmer Rd.	
[i]	
Asking price	$950,000.
Existing units	32
Purchase cost	$855,000.
No. of new units	16
Rehab costs	$422,600.
PROJECT COSTS	$311,300.
PROJECT CAP. COSTS	$2,267,600.

The result of the intensification and renovation of the existing units is that the projected rent schedule would be as follows;

Ave. Rent Ext.	$396.
Ave Rent	$584.
Ave. R. N. Ext	$540.
Ave. R. New	$627.
Increase,old %	27.

The existing units in the building after renovations would increase in retail charges by 27% in order to bear the costs of the renovations and additions.

As a comparison to the first model [i], the "purchase price " was

adjusted to reflect the value of the existing building based on the income of the present property in the next model. This is shown below as mode [ii];

[ii]	
Asking price	$950,000.
Existing units	32
Purchase cost	**$752,600.**
# of new units	16
Rehab costs	$422,600.
New unit cost	$678,600.
PROJECT COSTS	$309,300.
PROJECT CAP. COSTS	$2,163,100.

The result of the intensification and renovation of the existing units is that the projected rent schedule would be as follows;

Ave. Rent Ext.	$396.
Ave Rent	$561.
Ave. R. N. Ext	$519.
Ave. R. New	$603.
Increase,old %	**24.**

The existing units with the building after renovations and additions would increase in rental charges by 24% in order to bear the costs of the renovations and additions. This model when compared with mode [i] shows a reduction in the increased rental charges of 3% through a reduction in the purchase price. In this example demonstrates the "asking " price of the real estate listing when compared to the net income generated by the building is closer to the actual value of the property.

As a comparison to the first model [i], the building was examined as a simple renovation without the addition. With the appropriate adjustments, the following values are shown below as mode [iii];

[iii]	
Asking price	$950,000.
Existing units	32
Purchase cost	$855,000.
Rehab costs	$447,600.
New unit cost	$0.
PROJECT COSTS	$131,100.
PROJECT CAP. COSTS	**$1,433,700.**

The result of limiting the scope of work to the renovation of the existing units, the projected rent schedule would be as follows;

Ave. Rent Ext.	$396.
Ave Rent	$570.
Ave. R. N. Ext	$570.
Increase,old %	**31.**

In mode [iii] an adjustment has been made to reflect the construction reality that this would result in a slight increase over the "Rehab costs" when included in the larger scope of work, as displayed in mode [i].

The existing units with the building after renovations would increase in retail charges by 31% in order to bear the costs of the renovations. When this mode is compared with mode [i], the costing analysis shows that the additions reduce the rent increase by 4%.

The replacement value of the number of units contained in the 'intensified' as displayed in mode [i] has been calculated. This would involve the replacement of 48 new units in a newly constructed building. a number of adjustments have been made in the financial models used in modes [i-iii]. These include the purchase value of the land, length of the project schedule, and the value of the subsidy program. The values for new construction are taken for the 1985 edition of "Yards sticks for Costing" by Construction Data Systems ltd., and Southam Business Publications.

The replacement value of project as shown for 27 Walmer Road with the following values are shown below as mode [iv];

NEW CONSTRUCTION	
New units	48
Parking area	13,896 sq.ft.
Apts.. etc.	36,275 sq.ft.
Const. Costs	
Site services,etc	$100,000.
Parking area-32.85	$456,500.
Apts.. etc.- 45.00	$1,632,400.
Land Cst/unit	$576,000.
PROJECT COSTS	$2,764,900.
cst/unit	$45,600.
Contingency-5%	$81,600.
Fees-15%	$244,900.
Int. Financing	$49,000.

Marketing-2%	$55,300.
Financing-2%	$63,900.
PROJECT COSTS	$494,700.
PROJECT CAP. COSTS	$3,259,500.
Cst/unit	$67,900.
GRANTS	
Renterprise	$720,000.
PROJECT FINANCING	
Equity,required	$380,900.
Equity Pay/mo	$3,900.
Mortgage-12%	$2,158,600.
" paym't/mo	$22,300.
operat'g cost/mo	$7,000.
Mo. Rent Income	$33,200.
UNIT RENTS	
Total Units	48
Ave Rent	$692.
Compare to Int.	0.18

The result of the financial model of [iv] is that the increased rental charges would be 18% over the charges in mode [i] which are for the intensification of the existing building. This model is offered as a "conservative" estimate since the land value used in mode [iv] does not reflect the purchase and demolition costs as would be involved in the direct replacement of the Walmer Road Units. In addition the level of subsidy through the available 'Renterprise' program has been increased in mode [iv]. These adjustments reduce the "costs" of the project, yet result in a dramatic increase over the renovation and additions to the existing building. As this example is an urban site it demonstrates the additional costs incurred by the construction of such items as the underground garage.

Bloor Street, Cost Comparisons

The first examination of the financial feasibilities of the project utilizes the charts described as "Present Costs-Rental Tenure" in the previous part of this section. This primary model of the feasibility of the project is shown

below as "mode [i]"and contains the assumed values in this chart;

[i]	
Asking price	$370,000.
Existing units	9
Purchase cost	$333,000.
No. of new units	8
Rehab costs	$176,025.
New unit cost	$408,000.
PROJECT COSTS	$163,700.
PROJECT CAP. COSTS	**$1,080,700.**

The result of the intensification and renovation of the existing units is that the projected rent schedule would be as follows;

Ave. Rent Ext.	$509.
Ave Rent	$980.
Ave. R. N. Ext	$907.
Ave. R. New	$1,054.
Increase,old %	**45.0**

The existing units in the building after renovations would increase in retail charges by 44% in order to bear the costs of the renovations and additions.

As a comparison to the first model [i], the "purchase price " was adjusted to reflect the value of the existing building base on the income of the present property in the next model. This is shown below as mode [ii];

[ii]	
Asking price	$370,000.
Existing units	9
Purchase cost	**$138,600.**
# of new units	8
Rehab costs	$176,000.
New unit cost	$408,000.
PROJECT COSTS	$159,800.
PROJECT CAP. COSTS	**$882,400.**

The result of the intensification and renovation of the existing units is that the projected rent schedule would be as follows;

Ave. Rent Ext.	$573.
Ave Rent	$852.
Ave. R. N. Ext	$788.
Ave. R. New	$916.
Increase,old %	27.

The existing units with the building after renovations and additions would increase in rental charges by 27% in order to bear the costs of the renovations and additions. This model when compared with mode [i] shows a reduction in the increased rental charges of 3% through a reduction in the purchase price. In this example demonstrates the "asking " price of the real estate listing when compared to the net income generated by the building is closer to the actual value of the property.

As a comparison to the first model [i], the building was examined as a simple renovation without the addition. With the appropriate adjustments, the following values are shown below as mode [iii];

[iii]	
Asking price	$370,000.
Existing units	9
Purchase cost	$333,000.
Rehab costs	$181,700.
New unit cost	$0.
PROJECT COSTS	$52,900.
PROJECT CAP. COSTS	**$567,700.**

The result of limiting the scope of work to the renovation of the existing units, the projected rent schedule would be as follows;

Ave. Rent Ext.	$509.
Ave Rent	$933.
Ave. R. N. Ext	$933.
Increase,old %	**0.45**

In mode [iii] an adjustment has been made to reflect the construction reality that this would result in a slight increase over the "Rehab costs" when included in the larger scope of work, as displayed in mode [i].

The existing units with the building after renovations would increase in retail charges by 45% in order to bear the costs of the renovations. When this mode is compared with mode [i], the costing analysis shows that the additions are approximately equal to the renovations of the existing units. In this example, it is the purchase price of the building that distorts the comparison.

The replacement value of the number of units contained in the 'intensified' as displayed in mode [i] has been calculated. This would involve the replacement of 48 new units in a newly constructed building. a number of adjustments have been made in the financial models used in modes [i-iii]. These include the purchase value of the land, length of the project schedule, and the value of the subsidy program. The values for new construction are taken for the 1985 edition of "Yards sticks for Costing" by Construction Data Systems ltd., and Southam Business Publications.

The replacement value of project as shown for Bloor Street with the following values are shown below as mode [iv];

NEW CONSTRUCTION	
New units	16
Parking area	780 sq.ft..
Apts.. etc.	12693 sq.ft..
Const. Costs	
Site services,etc	$75,000.
Parking area-32.85	$25,350.
Apts.. etc.- 45.00	$571,185.
Land Cst/unit	$192,000.
PROJECT COSTS	$863,535.
cst/unit	$54,000.
Contingency-5%	$2,,500.
Fees-15%	$129,500.
Int. Financing	$51,800.
Marketing-2%	$17,300.
Financing-2%	$21,300.
PROJECT COSTS	$222,600.
PROJECT CAP. COSTS	$1,086,100.
Cst/unit	$67,900.
GRANTS	
Renterprise	$240,000.
PROJECT FINANCING	

Equity,required	$126,900.
Equity Pay/mo	$1,300.
Mortgage-12%	$719,200.
" paym't/mo	$7,400.
operat'g cost/mo	$5,700.
Mo. Rent Income	$14,400.
UNIT RENTS	
Total Units	16
Ave Rent	$900.

The result of the financial model of [iv] is that the rental charges would be decreased by 8% over the charges in mode [i] which are for the intensification of the existing building. This model is distorted by the land value [$192,000]used in mode [iv] as it does not reflect the purchase and demolition costs as would be involved in the direct replacement of the Bloor Street Units. In addition the level of subsidy through the available 'Renterprise' program has been increased in mode [iv]. These adjustments reduce the "costs" of the project, over the renovation and additions to the existing building.

40 Walmer Road, Cost Comparisons

An additional model of the financial feasibility of an 'intensification' of a project utilizes an example project which was not included in the design section as the building resembles the physical configuration of both 27 Walmer Road and the Sheppard Ave example. The costing has been included to show a number of effects that optimum base building would contain and the effects on the costing feasibility that the various modes would have.

The differences in this building are that the rents have kept pace with the rents of newer accommodation and do not show the distortions of rent controls. This has affected the purchase value and shows a minimum impact on the existing rents of the improvements. The increases in the rents for this building are also the results of the continuing preventative maintenance that the landlord has done over the years. This results in the need for minimal renovations to the existing units and there fore a decreased intensification cost. All considerations included it is an example of a well managed building where the shock of a renovated and improved building are not felt in a single dramatic increase.

The other condition which affects this project is the scale of the additions. The building has been examined by a structural engineer and has been judged to be capable of receiving a three story addition. This would affect the viability of the project and would improve the financial projections.

This example of the financial feasibilities of the project utilizes the charts described as "Present Costs-Rental Tenure" in the previous part of this section. The primary model of the feasibility of the project is shown below as "mode [i]"and contains the assumed values in this chart;

40 Walmer Rd..	
[i]	
Asking price	$1,300,000.
Existing units	32
Purchase cost	$1,235,000.
# of new units	28
Rehab costs	$177,200.
New unit cost	$964,600.
PROJECT COSTS	$335,100.
PROJECT CAP. COSTS	**$2,712,000.**

The result of the intensification and renovation of the existing units is that the projected rent schedule would be as follows;

Ave. Rent Ext.	$501.
Ave Rent	$567.
Ave. R. N. Ext	$524.
Ave. R. New	$609.
Increase,old %	**4.**

The existing units in the building after renovations would increase in retail charges by 4% in order to bear the costs of the renovations and additions.

As a comparison to the first model [i], the "purchase price " was adjusted to reflect the value of the existing building base on the income of the present property in the next model. This is shown below as mode [ii];

[ii]	
Asking price	$1,300,000.
Existing units	32
Purchase cost	$1,061,500.
# of new units	28
Rehab costs	$177,200.
New unit cost	$964,600.

PROJECT COSTS	$331,600.
PROJECT CAP. COSTS	$2,535,000.

The result of the intensification and renovation of the existing units is that the projected rent schedule would be as follows;

Ave. Rent Ext.	$501.
Ave Rent	$536.
Ave. R. N. Ext	$496.
Ave. R. New	$577.
Increase,old %	-1.0

The existing units of the building after renovations and additions would decrease in rental charges by 1% in order to bear the costs of the renovations and additions. This model when compared with mode [i] shows a reduction in the increased rental charges of 5% through a reduction in the purchase price. In this example demonstrates the "asking " price of the real estate listing when compared to the net income generated by the building is closer to the actual value of the property.

As a comparison to the first model [i], the building was examined as a simple renovation without the addition. With the appropriate adjustments, the following values are shown below as mode [iii];

[iii]	
Asking price	$1,300,000.
Existing units	32
Purchase cost	$1,235,000.
No. of new units	0
Rehab costs	$215,000.
New unit cost	$0.
PROJECT COSTS	$79,500.
PROJECT CAP. COSTS	$1,529,500.

The result of limiting the scope of work to the renovation of the existing units, the projected rent schedule would be as follows;

Ave. Rent Ext.	$501.
Ave Rent	$609.
Ave. R. N. Ext	$609.
Ave. R. New	#DIV/0!
Increase,old %	18.0

In mode [iii] an adjustment has been made to reflect the construction reality that this would result in a slight increase over the "Rehab costs"

when included in the larger scope of work, as displayed in mode [i].

The existing units with the building after renovations would increase in retail charges by 18% in order to bear the costs of the renovations and the purchase price of the building. When this mode is compared with mode [i], the costing analysis shows that the additions reduce the rent increase by 14%.

The replacement value of the number of units contained in the 'intensified' as displayed in mode [i] has been calculated. This would involve the replacement of 60 new units in a newly constructed building. a number of adjustments have been made in the financial models used in modes [i-iii]. These include the purchase value of the land, length of the project schedule, and the value of the subsidy program. The values for new construction are taken for the 1985 edition of "Yards sticks for Costing" by Construction Data Systems ltd., and Southam Business Publications.

The replacement value of project as shown for 40 Walmer Road with the following values are shown below as mode [iv];

NEW CONSTRUCTION	
New units	60
Parking area	10000 sq.ft..
Apts.. etc.	43000 sq.ft..
Const. Costs	
Site services,etc	$100,000.
Parking area-32.85	$328,500.
Apts.. etc.- 45.00	$1,935,000.
Land Cst/unit	$720,000.
PROJECT COSTS	$3,083,500.
cst/unit	$39,400.
Contingency-5%	$96,800.
Fees-15%	$290,300.
Int. Financing	$58,100.
Marketing-2%	$61,700.
Financing-2%	$71,800.
PROJECT COSTS	$578,500.
PROJECT CAP. COSTS	$3,662,000.
Cst/unit	$61,000.

GRANTS	
Renterprise	$900,000.
PROJECT FINANCING	
Equity,required	$414,300.
Equity Pay/mo	$4,300.
Mortgage-12%	$2,347,700.
" paym't/mo	$24,200.
operat'g cost/mo	$9,300.
Mo. Rent Income	$37,800.
UNIT RENTS	
Total Units	60
Ave Rent	$630.
Increase int../new	11.0

The result of the financial model of [iv] is that the increased rental charges would be 11% over the charges in mode [i] which are for the intensification of the existing building. This model is offered as a "conservative" estimate as the land value used in mode [iv] does not reflect the purchase and demolition costs as would be involved in the direct replacement of the Units at Walmer Road. In addition the level of subsidy through the available 'Renterprise' program has been increased in mode [iv]. These adjustments reduce the "costs" of the project, yet result in a dramatic increase over the renovation and additions to the existing building. As this example is an urban site it demonstrates the additional costs incurred by the construction on such sites.

Comparisons-Financial Feasibilities

This section examines and compares the models used to examine the various methods of development.

The first mode of developments examined the intensification of the subject properties and affords a comparison between the rent increases with the renovations and additions, versus the renovation of the existing properties. This comparison shows that the "intensified" scheme produces a reduction in the rent increases. This compares Modes [i] and Mode [iii]. The reduction in the increases was as follows;

40 Walmer Road	14%
Sheppard Ave	4%
27 Walmer Road	4%
745 Bloor Street	3%

In each examples the additions of extra units can be used to reduce the burden on the existing tenants of the improvements to their units. The average from this sample would be 6%.

The second comparison is to examine the rents between the "intensified" units and the rents projected for the replacement of these units by a new building. This compares Modes [i] and Mode [iv].

27 Walmer Road	18%
40 Walmer Road	11%
Sheppard Ave	7%
745 Bloor Street	-8%

In three of these example the additions of extra units can be used to reduced the burden on the existing tenants of the improvements to their units. The average from this sample would be 7% decrease. The Bloor Street model is the exception and this is due to the purchase price of property used in Mode [i] and the reduced land value used in Mode [iv] to calculate the replacement costs. When Bloor Street is excluded from the sample, the difference is 12%.

The next method of comparison is to set an assumed unit cost or value in each of the following models considered for the various sites. This would be to isolate the unit cost in Mode [i], the "intensification scheme"of a new unit, Mode [iii], the renovation of an existing unit, and Mode [iv], the unit cost in the replacement of the entire building. These are shown for the various sites in the following table;

27 Walmer	
Rehab cst	$40,700.
Int. cst	$42,400.
Replace't cst	$45,600.
40 Walmer	
Rehab cst	$45,300.
Int. cst	$34,400.
Replace't cst	$39,400.

Sheppard Ave.

Rehab cst	$53,600.
Int. cst	$53,800.
Replace't cst	$60,000.
Bloor Street	
Rehab cst	$57,200.
Int. cst	$51,000.
Replace't cst	$54,000.

In the calculation of these values the land cost portion has been excluded from the "Intensification " unit as this apportionment is too difficult to assess. This omission mirrors the effect in that this cost would not be assumed to be built into the purchase price of the property.

The conclusions from this comparison are that in most cases the 'Intensified" unit is at or near the lowest cost of the units. This does not hold for the 27 Walmer Road unit and is due to the fact that the unit mix in the "intensified" units contains a much higher proportion of two bedroom units than the "existing" units. There fore their construction costs will be higher. In each case however the Intensified unit cost is below the replacement cost of a comparable "new unit."

The other comparison that aids in the examination of the various development examples is the 'Per square foot" construction costs. For the various examples the following costs were determined in the individual costing take off's of the designs;

27 Walmer Road	$48.83/sq.ft..
40 Walmer Road	$45.93
Sheppard Ave	$53.51
745 Bloor Street	$58.03

The values shown here represent the degree of construction involved in each project. As the volume of work and the number of floors to the additions increase, the unit figure for construction drops. The conclusion from this display is that small buildings with small additions will not afford the same cost effective as larger projects.

Conclusions

The study has examined four projects in the Toronto area regarding the financial considerations of the intensification proposals for these buildings. An attempt has been made to examine a range of "typical" applications for the Toronto area. The criteria in the selection of these projects has been the generic physical characteristics of these examples. The selection of the examples has not been made with the intention of portraying a dramatic financial viability. The effort has been to select the

average and to construct consevative models of their viability. The conclusions therefore dislpay a "trend" rather than dramatic results.

The conclusions from the financial analysis are as follows:

The rental tenure modeling of the sample projects show that the intensification of the low-rise buildings reduces the impact of the renovations of the existing units for the present tenants. This averaged in the study for the comparison of "intensified" versus "renovation only" [modes I vrs. mode III] as a diference of 6% in the impact on the rents for existing tenents. In the comparison with adjusted puchase prices for the existing building, the comparison of "intensified" versus "renovation only" [modes ii vrs. mode iii], this was a diference of 6% in the impact on the rents for existing tenents. The conclusion is that "intensification" is a benefit to the existing tenants of the building.

When the "intensification" is compared to the replacement cost of a comparable number of units in a new building, (modes [i] vrs. [iv]) the "intensification" shows a decreased impact on rents to an average of 9% for the samples examined. If the Bloor Street example is excluded from the estimates the average decreased impact is 12% and probably represents an average for Ontario.

The study of the financial viability of the projects relied on the information avaliable and on a simplified model. The degree of the cost effectiveness must be measured on an individual project basis. The analysis is distorted by a variety of market pressures including, purchase prices, subsidy programs, and the scale of the intensification. In the study, the intensification provided a cost effectiveness on the rental tenure measurement of up to 18% over other methods of improving the housing for the samples studied, (mode[i] vrs mode[iv] for 27 Walmer Road).

In conclusion the most accurate element of the "intensification" financial viability is the improvement costs or construction costs for the individual projects. As the scale of the "intensification" increases the square foot cost decreases. The range of the examples studied averages $13.00 or approximately 25%. of the construction costs of new units. The scale of the "intensification" is therefore one of the primary determining factors in the economic viability of individual schemes.

Intensification project costing

	1	2	3	4
1				
2	PROJECT TITLE	688 Shepard Ave	PROJECT TITLE	688 Shepard
3	Mode of Developmen	Private Rental[i]	Mode of Developme	Private Rental [ii]
4	PRESENT COSTS		PRESENT COSTS	
5	Asking price	$1,550,000.00	Asking price	$1,550,000.00
6	Existing units	35	Existing units	35
7	Per unit cost	$44,285.71	Per unit cost	$44,285.71
8	Purchase cost	$1,395,000.00	Purchase cost	$1,024,066.00
9	Per unit pur. ost	$39,857.14	Per unit pur. ost	$29,259.03
10	Gross Income	$202,940.00	Gross Income	$202,940.00
11	Exist'g exp.	$81,000.00	Exist'g exp.	$81,000.00
12	Exist'g taxes	$30,500.00	Exist'g taxes	$30,500.00
13	Exist'g com.exp	$50,500.00	Exist'g com.exp	$50,500.00
14	" exp/mo	$6,750.00	" exp/mo	$6,750.00
15	" taxes/mo	$2,541.67	" taxes/mo	$2,541.67
16	" com.exp/mo	$4,208.33	" com.exp/mo	$4,208.33
17				
18	REHAB EXISTING		REHAB EXISTING	
19				
20	Rehab costs	$461,548.00	Rehab costs	$461,548.00
21	rehab/unit	$13,187.09	rehab/unit	$13,187.09
22				
23	NEW CONSTRUCTION		NEW CONSTRUCTION	
24				
25	# of new units	10	# of new units	10
26	Area constructed	10,050	Area constructed	10,050
27	New unit cost	$537,787.00	New unit cost	$537,787.00
28	Per unit cost	$53,778.70	Per unit cost	$53,778.70
29	Per square ft.	$53.51	Per square ft.	$53.51
30				
31	REHAB & NEW CONS	$999,335.00	REHAB & NEW CON	$999,335.00
32				
33	PROJECT COSTS	$2,394,335.00	PROJECT COSTS	$2,023,401.00
34				
35	Contiguency-5%	$49,966.75	Contiguency-5%	$49,966.75
36	Fees-15%	$149,900.25	Fees-15%	$149,900.25
37	Int. Financing	$29,980.05	Int. Financing	$29,980.05
38	Marketing-2%	$10,755.74	Marketing-2%	$10,755.74
39	Financing-2%	$52,698.76	Financing-2%	$45,280.08
40				
41	PROJECT COSTS	$293,301.55	PROJECT COSTS	$285,882.87
42				
43	PROJECT CAP. COST	$2,687,636.55	PROJECT CAP. COS	$2,309,283.87
44				
45	GRANTS		GRANTS	
46				
47	RAPP	$131,250.00	RAPP	$131,250.00
48	Conv.to Rent	$70,000.00	Conv.to Rent	$70,000.00
49				
50	PROJECT FINANCING		PROJECT FINANCING	
51				
52	Equity required	$372,957.98	Equity required	$316,205.08
53	Equity Pay/mo	$3,848.55	Equity Pay/mo	$3,262.92

Intensification,project costing

	1	2	3	4
54	Morgage-12%	$2,113,428.56	Morgage-12%	$1,791,828.79
55	" paym't/mo	$21,808.47	" paym't/mo	$18,489.88
56	operat'g cost/mo	$7,810.71	operat'g cost/mo	$7,810.71
57	Mo. Rent Income	$33,467.74	Mo. Rent Income	$29,563.52
58				
59	UNIT RENTS		UNIT RENTS	
60				
61	Total Units	45	Total Units	45
62	Ave. Rent Ext.	$483.19	Ave. Rent Ext.	$483.19
63	Ave Rent	$743.73	Ave Rent	$656.97
64	Ave. R. N. Ext	$687.95	Ave. R. N. Ext	$607.69
65	Ave. R. New	$799.51	Ave. R. New	$706.24
66	Increase,old %	0.30	Increase,old %	0.20
67				
68				
69	[i]		[ii]	
70	Asking price	$1,550,000.00	Asking price	$1,550,000.00
71	Existing units	35	Existing units	35
72	Purchase cost	$1,395,000.00	Purchase cost	$1,024,066.00
73	# of new units	10	# of new units	10
74	Rehab costs	$461,548.00	Rehab costs	$461,548.00
75	New unit cost	$537,787.00	New unit cost	$537,787.00
76	PROJECT COSTS	$293,301.55	PROJECT COSTS	$285,882.87
77	PROJECT CAP. COST	$2,687,636.55	PROJECT CAP. COS	$2,309,283.87
78				
79				
80	Ave. Rent Ext.	$483.19	Ave. Rent Ext.	$483.19
81	Ave Rent	$743.73	Ave Rent	$656.97
82	Ave. R. N. Ext	$687.95	Ave. R. N. Ext	$607.69
83	Ave. R. New	$799.51	Ave. R. New	$706.24
84	Increase,old %	0.30	Increase,old %	0.20
85				

Summary of the Study
" Intensification of Low-rise Apartment Buildings"

The purpose of the Study

The subject of this study is the "intensification" of existing low-rise apartment buildings. The proposal for the intensification of low-rise apartment buildings will be through the addition of new units to existing low-rise buildings. The intensification is based on the hypothesis that the buildings are capable of supporting additional structural loads of multistory additions. This is possible by virtue of these buildings being "over built" and by the proposed use of lightweight building systems for the additions.

We believe that not only is it technically feasible to increase the number of units within a given structure but also, in many cases, it is socially desirable to do so. By the simple measure of building density, many of these older buildings are below the density that is permitted today. In the past, such buildings were often demolished and the stock of housing was reduced. Through the use of additions to the existing buildings, the new units are integrated into the existing urban and social fabric of the community, rather than requiring new lands to be developed.

Study method

The purpose of this study is to investigate existing three to five storey apartment buildings with the objective of adding one, two or three storey additions to these structures. The buildings and their additions will be examined in terms of the structural, mechanical, electrical and architectural requirements. Cost estimates from this work will then be combined with purchase costs, development costs, finance costs, etc. in order to scrutinize the viability of such a project.

In summary the various aspects of the study may be outlined as follows: the need exists for "intensification" due to the low vacancy rates of apartment rental stock in many areas of Canada. The need to rejuvenate existing buildings is the result of the age and standards used to construct many of these buildings. The benefits to the "intensification" of these buildings is that it is a cost effective means of upgrading the existing housing stock and providing additional units. The study is proposed to be used as an information base. The "cost effective " claims of this study are dependent on the method of financing the projects and the means of tenure associated with the buildings. These aspects of the "intensification" will be examined in detail but the future use of this study will be on an individual project by project basis.

Study sample

Some qualifications should be made on the use of the stastical data in determining average conditions. There are differences in the statistics between the City of Toronto, Metro Area, and of Ontario, therefore care must be taken in any extrapolation of this information to Ontario or other parts of Canada.

The assumption made is that the Metro Toronto sample should represent a typical cross section due to its one third contribution to the total stock of Ontario, even though it may represent a lower average contribution to the total rental stock, [low-rise vrs high-rise], in Metro Toronto than its contribution in other areas of Ontario.

In this tabulation approximately 70% of the low-rise buildings were constructed prior to 1961 in the Toronto C.M.A. and in the City. The inference from this statistic is that the original mechanical systems have been replaced or are probably in need of extensive repairs in this age of building. The Fire Safety measures in these buildings would not be equal to current standards. The energy efficiency and comfort levels would be questionable due to single glazing for the windows. The interior finishes and features would require refurbishing. The habitable condition of these buildings is at a critical point where extensive re-conditioning may be required.

The dominant condition of low rise apartment stock is a three story building with nine to forty units, [City of Toronto]. The secondary condition would be a four story building with more than twenty one units.

Need for Intensification

The present accommodation provided by low-rise rental buildings may affect the future general demand for accommodation as is indicated in the report by Peter Barnard Associates[1]: in the next ten years the metropolitan areas of Toronto, Ottawa, and Hamilton will lose approximately 16% of the existing low-rise stock due to physical deterioration. Over the next 20 years the figure may be as high as 46%. The other factor that is likely to further increase the medium and long term losses of low-rise accommodation is the redevelopment or conversion of of these buildings. The conclusions based on case studies and various extrapolations is that a further 14 % of this stock may be lost in the next 10 years. The conclusions from the examination of the various factors is that up to 30% of the total stock "could be affected by some form of significant change over the next ten years." If these are true indications, the existing housing shortages will be subject to further pressures.

Planning Considerations

In reviewing the building density categories, a range of typical physical conditions are apparent. The relationship to the planning, zoning, and building standards vary with their location in the various municipal jurisdictions. An examination of the samples reveals both conformance to present municipal zoning standards, and buildings substantially in non-conformance to current standards at their present intensity of use. The other factor revealed in the examination is that the Municipal standards also vary. In some municipalities, such as the City of Toronto, zoning "bonuses" are available for buildings containing such categories of use as "assisted housing". In general the municipalities in the Metro area have provision in their Official Plans and zoning designations for use to accommodate the aging or handicapped in reference to such planning criteria as parking standards and densities.

The general statement made in the introduction of the study, "Many of these [low-rise buildings] are below the density permitted today." should receive a note of caution. The density calculation may be one measure of the permitted use and not describe the whole condition of the zoning of the property. As these buildings are existing structures and may have been built under obsolete zoning designations, the buildings may not conform to other standards of land use such as setbacks, unit per acre calculations or parking standards. Although the "density" may be under the maximum permitted, other measurements may restrict the "intensification" of the property. In the examples examined for this study, the primary consideration used by municipal planning authorities was the "density" measurement, however in every case, variances to the present zoning bylaws would be required.

The lot size and present density of the properties vary in the samples collected for this study. The random selection of the samples display densities from 37 units per acre to 226 units per acre [Table x.]. The average in this sample was approximately 90 units per acre. Low-rise buildings do not display an average categories as to "density" measurements.

Financial findings

The last of the study section examines the financial feasibility of the various intensification schemes offered in the design section. The purpose of this section is to examine the capital costs, incremental costs, and their effect on the finances of the three proposals. The financial implications of the proposals are then examined as to the mode of tenure and the effects on the rent schedules or on the value of the projects. This is termed as the "Rental Tenure Costing."

The method of analysis ["Rental Tenure Costing"] relies on the costing derived from the three designs as contained in Sections D, E & F for the proposals on Walmer Road, Bloor Street, and Sheppard Ave. The capital construction costs for both the additions and the renovations of the existing units are given in detail in these sections. The assumptions, options and method of costing are given in the explanation of the projects. This section of the report examines these costs as part of Capital costs of the total project's development costs.

The base for the comparison between the various proposals for Walmer Road, Bloor Street, and Sheppard Avenue, is a "Rental Tenure" model to show the simple state of an "intensified" private rental project. In this mode of development, the costs and benefits can be shown as they affect the rents of the buildings and thus afford a simple cost/benefit analysis of the intensification of the various schemes.

The other comparison is to examine the buildings as simple renovations and does not include the additions portion of the project. This will offer a means of comparing the benefits of the intensification within the context of each individual example.

The measurement of the buildings used in the models included in the study, is a comparison of the existing average rents before and after the intensification, of the existing units located in the existing building. Since these buildings have been subject to rent control the existing rents may be distorted as to the "average" market rent. The present rents have been accepted but may distort the conclusions of the individual examples. The comparison of new average rents with the old average rents may not reflect the true market value. For example in the two buildings on Walmer Road comparable units of the same age, same size of building, etc. show a variance of $75.00 per month in their rents. Again the simple measurement of comparing old and new rents may contain some distortions.

The maximum physical diversity allowed on various properties is another factor open to manipulation. In most buildings surveyed a two story addition is physically possible. In some cases a three story addition may be built. The reality of the situation is that the municipalities and the planning practice may not permit this degree of intensification. We then have another potential distortion in that costs for the new units and other improvements decrease with the size of the additions. Therefore another factor is identified that can distort the feasibility of the project.

The first model of the financial feasibility examined in the intensification of the subject properties displays a comparison between the rent increases with the renovations and additions, versus the renovation of the existing properties. This comparison shows that the "intensified"

scheme produces a reduction in the rent increases. This compares Modes [i] and Mode [iii]. The reduction in the increases was as follows for the sample projects;

40 Walmer Road	14%
Sheppard Ave	4%
27 Walmer Road	4%
745 Bloor Street	3%

In each example the additions of extra units can be used to reduce the burden on the existing tenants of the improvements to their units. The average from this sample would be 6%.

The second comparison is to examine the average rents between the "intensified" units and the average rents projected for the replacement of these units by a new building. This compares the average rents in Modes [i] and Mode [iv] and displays the projected change in rents between the two modes of development.

27 Walmer Road	18.%
40 Walmer Road	11.%
Sheppard Ave	7.%
745 Bloor Street	-8.%

In three of these examples, the addition of the extra units can reduce the burden on the existing tenants in the improvements of their units by an average of a 7% decrease. The Bloor Street model is the exception and this is due to the purchase price of the property used in Mode [i] and the reduced land value used in Mode [iv] to calculate the replacement costs. When Bloor Street is excluded from the sample, the difference is 12%.

The conclusions from this comparison are that in most cases the "Intensified" unit is at, or near, the lowest cost of the units under the various development schemes. This does not hold for the 27 Walmer Road unit and is due to the fact that the unit mix in the "intensified" units contains a much higher proportion of two bedroom units than the "existing" units. Therefore their construction costs will be higher. In each case, however, the Intensified unit cost is below the replacement cost of a comparable "new unit."

The other comparison that aids in the examination of the various development examples is the 'Per square foot" construction costs. For the various examples the following costs were determined in the individual costing take off's of the designs;

27 Walmer Road	$48.83/sq.ft..
40 Walmer Road	$45.93
Sheppard Ave	$53.51

745 Bloor Street $58.03

The values shown here represent the degree of construction involved in each project. As the volume of work and the number of floors to the additions increase, the unit figure for construction drops. The conclusion from this display is that small buildings with small additions will not afford the same cost effective as larger projects.

Conclusions of the financial models

The study has examined four projects in the Toronto area regarding the financial considerations of the intensification proposals for these buildings. An attempt has been made to examine a range of "typical" applications for the Toronto area. The criteria in the selection of these projects has been the generic physical characteristics of these examples. The selection of the examples has not been made with the intention of portraying a dramatic financial viability by selecting attractive financial examples. The effort has been to select the average and to construct consevative models of their viability. The conclusions therefore dislpay a "trend" rather than dramatic results.

The conclusions from the financial analysis are as follows:

The rental tenure modeling of the sample projects show that the intensification of the low-rise buildings reduces the impact of the renovations of the existing units for the present tenants. This averaged in the study for the comparison of "intensified" versus "renovation only" [modes I vrs. mode III] as a diference of 6% in the impact on the rents for existing tenents. In the comparison with adjusted puchase prices for the existing building, the comparison of "intensified" versus "renovation only" [modes ii vrs. mode iii], this was a diference of 6% in the impact on the rents for existing tenents. The conclusion is that "intensification" is a benefit to the existing tenants of the building by reducing the increases in the rents that would be born by the tenants in the present building. It may also be assumed that to only do emergency repairs in the short term will only delay the increases required to bring the existing buildings up to current standards.

When the "intensification" is compared to the replacement cost of a comparable number of units in a new building, (modes [i] vrs. [iv]) the "intensification" shows a decreased impact on rents to an average of 9% for the samples examined. If the Bloor Street example is excluded from the estimates the average decreased impact is 12% and probably represents an average for Ontario.

The study of the financial viability of the projects relied on the

information avaliable and on a simplified model. The degree of the cost effectiveness must be measured on an individual project basis. The analysis is distorted by a variety of market pressures including, purchase prices, subsidy programs, and the scale of the intensification. In the study, the intensification provided a cost effectiveness on the rental tenure measurement of up to 18% over other methods of improving the housing for the samples studied, (mode[i] vrs mode[iv] for 27 Walmer Road).

In conclusion the most accurate element of the "intensification" financial viability is the improvement costs or construction costs for the individual projects. As the scale of the "intensification" increases the square foot cost decreases. The range of the examples studied averages $13.00 or approximately 25%. of the construction costs of new units. The scale of the "intensification" is therefore one of the primary determining factors in the economic viability of individual schemes.

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